

Appendix 2.1

Maricopa County's Instructions for Reporting 2002 Annual Air Pollution Emissions



**MARICOPA COUNTY
ENVIRONMENTAL SERVICES**

INSTRUCTIONS

FOR REPORTING 2002

ANNUAL AIR POLLUTION EMISSIONS

January 2003

**Emissions Inventory Unit
1001 North Central Avenue, Suite 250
Phoenix, Arizona 85004
(602) 506-6790
(602) 506-6985 (Fax)**

**Copies of this document, related forms
and other reference materials are available online at:
*www.maricopa.gov/envsvc/air/ei.asp***

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WHAT'S NEW FOR 2002?

- Some **preprinted information** on your report is different from last year. Please review the enclosed forms carefully. If you use your own computerized reproduction of our forms from a previous report, your information must conform to the current information supplied on our 2002 preprinted forms.
- **EPA emission factors for lead (Pb)** are now included for many processes.
- New guidance exists for calculating emissions from **cultured marble and fiberglass processes** that use vapor-suppressed resins. Refer to the "Emissions Inventory Help Sheet for Polyester Resin Application" for further details.
- All **2002 reporting forms are available** at: www.maricopa.gov/envsvc/air/ei/eiguides.asp in an editable .pdf format (requires Adobe Acrobat). Data can be entered on these forms and printed to be included in the hard copy submission of this years report.

I. INTRODUCTION

An annual emissions inventory is a formal report submitted by a business that: (1) lists all processes emitting reportable air pollutants and (2) provides details about each of those processes. Submitting the emissions inventory report is **required** as a condition of your Maricopa County Air Quality Permit. A separate emissions report is required for each business location determined by the air quality permit.

Follow these steps to complete your 2002 Maricopa County emissions inventory:

STEP 1: Determine which forms are needed for your business. There are eight different forms available, but not all are required for every type of business. For most permittees, this packet contains the necessary pre-printed forms based on your site's most recent emissions inventory.

1. **Business Form:** Contains general contact information about the firm. This form is required for all businesses.
2. **Stack Form:** Only required if your business location annually emits over 10 tons of any of these single pollutants (CO, VOC, NO_x, PM₁₀, or SO_x). A "stack" is defined as a stack, pipe, vent or opening through which a significant percentage of emissions (from one or more processes) are released into the atmosphere. See the "Stack Form Instructions" on page 7 for specific requirements.
3. **Control Device Form:** Required only if there is one or more emission control devices used at the business location.
4. **General Process Form** and
5. **Evaporative Process Form:** Either or both will be required for all businesses.
6. **Off-Site Recycling/Disposal Form:** Required if you want to claim off-site recycling or disposal.
7. **Emission Factor Calculations:** Required as attachment for each process for which you calculated your own emission factors.
8. **Data Certification/Fee Calculation Form:** Required for all businesses.

STEP 2: Complete the applicable forms. Detailed information on how to complete the most common forms is included in this document. This packet also contains information about other resources (workshops, one-on-one assistance, etc.) available to help you in completing the necessary forms.

STEP 3: Make a copy of your completed emissions inventory report. Make sure to **KEEP COPIES** of all forms submitted and copies of all records and calculations used in completing the forms. Air pollution control regulations require that you keep all documentation for at least **FIVE YEARS** at the location where pollution is being emitted.

STEP 4: Make sure the Data Certification/Fee Calculation Form is **signed** by a company representative. ***Include your air quality permit number on all correspondence and checks submitted with your report.*** Return the original, signed copy of your annual emission report, with payment for any applicable emission fees, to:

Maricopa County Environmental Services Dept.
Emissions Inventory Unit
1001 North Central Avenue, Suite 100
Phoenix, AZ 85004

II. REPORTING REQUIREMENTS

POLLUTANTS TO BE REPORTED:

Your emissions inventory must include your business's emissions of the following air pollutants:

CO	= Carbon monoxide
NO _x	= Nitrogen oxides
PM ₁₀	= Particulate matter less than 10 microns
SO _x	= Sulfur oxides
VOC	= Volatile organic compounds *
HAP&NON	= Hazardous Air Pollutant (HAP) that is also NOT a precursor of ozone **
NH _x	= Ammonia & ammonium compounds
Pb	= Lead

* A ***volatile organic compound (VOC)*** is defined as any compound of carbon that participates in atmospheric photochemical reactions. This definition ***excludes***: carbon monoxide, carbon dioxide, acetone, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, as well as certain other organic compounds. (See Maricopa County Air Pollution Control Rule 100 for a full definition.)

** ***HAP&NON***: Usage of certain materials that are both a Hazardous Air Pollutant (HAP) and not a precursor of ozone should also be reported if:

- (a) your site is subject to a Federal MACT (Maximum Achievable Control Technology) standard **OR**
- (b) your air quality permit contains specific quantitative limits on these materials.

The most common materials in this category include:

- methylene chloride (dichloromethane)
- perchloroethylene
- 111-trichloroethane (111-TCA or methyl chloroform)
- hydrochloric acid
- hydrofluoric acid

VOC materials that are classified as HAPs are reported as VOC.

ASSIGNING IDENTIFICATION NUMBERS (IDs):

Unique IDs are required for the following report elements: Stacks, Control Devices and Processes. For processes, that means a process ID number may be used only once on all General Process and Evaporative Process Forms.

These numbers are usually assigned by the person who prepares the original report. If you are adding something new to a preprinted report, assign a number not already in use. Once an ID number is assigned, continue using the same number for that item from year to year, indefinitely, until it is no longer part of your report. If that item is no longer reportable, return the preprinted form with a brief explanation. Do not use that ID number again.

III. HELPFUL HINTS AND INFORMATION

Be sure to verify all preprinted information on forms. If any information is incorrect or blank, please provide correct information. Making a change on the Business Form will **NOT** transfer the permit ownership or location. You must contact the Department's Business Services Office at (602) 506-6464 to accomplish this.

WHAT IS A PROCESS? A **process** is a business activity at your location that emits CO, VOC, NO_x, PM₁₀, SO_x, NH_x (ammonia compounds) or HAP&NON (hazardous air pollutants which are not precursors of ozone), and has only **one** material type as input and **one** operating schedule. For each applicable process at your business, you must assign a unique Process ID number to differentiate each process.

PROCESSES AND MATERIALS THAT DO **NOT** HAVE TO BE REPORTED:

- Welding.
- Acetone usage.
- Fuel use for forklifts or other vehicles. (NOTE: Fuel use in **non-vehicle** engines **is** reportable.)
- Storage emissions from fuels or organic chemicals in any tank with a capacity less than 250 gals.
- Storage emissions of diesel and Jet A fuel in underground tanks of any size.
- Storage emissions of diesel and Jet A fuel in aboveground tanks, throughput less than 4,000,000 gal/yr.
- Routine pesticide usage, housekeeping cleaners, and routine maintenance painting at your facility.

Please group all similar equipment and materials together before applying the following limitations:

- Internal combustion engines (e.g., emergency generators) or external combustion equipment (e.g., boilers and heaters) that operated less than 100 hrs. and burned less than 200 gals. diesel or gas, or less than 100,000 cubic feet of natural gas.
- Materials with usage of less than 15 gallons or 100 pounds per year.

GROUPING MATERIALS AND/OR EQUIPMENT UNDER ONE PROCESS ID:

You can group together under one process ID:

- All internal combustion engines **less than 600 horsepower** if they burn the same fuel and have similar operating schedules.
- All external combustion equipment (boilers, heaters) **less than 10,000,000 Btu** per hour if they burn the same fuel and have similar operating schedules.
- All similar evaporative materials with similar emission factors that have similar operating schedules and process descriptions. For example, group low-VOC red paint, green paint and white paint together as one material "Paint: Low-VOC." Do not group thinners with paints. **NOTE:** Attach documentation showing how the grouped emission factor was determined. See the example on page 18.
- All underground tanks with the same fuel and same type of vapor recovery system. **DO NOT** report diesel or Jet A underground tank emissions. **DO NOT** report aboveground diesel or Jet A tank emissions when throughput is less than 4,000,000 gallons annually.

INDUSTRY-SPECIFIC INSTRUCTIONS: Additional help sheets, detailed examples, and special instructions are available for a number of specific processes or industries listed below. To get copies of any of these documents, please visit our Web page at www.maricopa.gov/envsvc/air/ei.asp or call (602) 506-6790.

- | | | |
|---------------------------------|-------------------------------|-----------------------------------|
| • Bakeries | • Natural Gas Boilers/Heaters | • Sand and Gravel Plants |
| • Fuel Storage and Handling | • Polyester Resin | • Using EPA's TANKS 4.09b Program |
| • Incinerators and Crematories | • Printing Plants | • Vehicle Travel on Unpaved Roads |
| • Lg. Aboveground Storage Tanks | • Roofing Asphalt | • Woodworking |
| • Concrete Batch Plants | • Vehicle Refinishing | |

COMMONLY USED CONVERSION FACTORS:

1 gram/liter	= 0.00834 lbs/gal	1 foot	= 0.0001894 mile
1 liter	= 0.2642 gallon US	1 square foot	= 0.000022957 acre
1 therm	= 0.0000952 MMCF	1 pound	= 0.0005 ton

NOTE: MM = 1,000,000 Example: MM CF = 1,000,000 cubic feet
M = 1,000 Example: M GAL = 1,000 gallons

CONFIDENTIALITY OF DATA SUBMITTED:

Information submitted in your annual emissions reports must be made available to the public unless it meets certain criteria of Arizona State Statutes and Maricopa County Rules. Applicable excerpts concerning confidentiality of data are reproduced below.

ARS § 49-487 D. ...the following information shall be available to the public:...

2. The chemical constituents, concentrations and amounts of any emission of any air contaminant. ...

MARICOPA COUNTY AIR POLLUTION CONTROL RULES AND REGULATIONS, Rule 100:

200.107 TRADE SECRETS - Information to which all of the following apply:

- a. A person has taken reasonable measures to protect from disclosure and the person intends to continue to take such measures.
- b. The information is not, and has not been, reasonably obtainable without the person's consent by other persons, other than governmental bodies, by use of legitimate means, other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding.
- c. No statute, including ARS §49-487, specifically requires disclosure of the information to the public.
- d. The person has satisfactorily shown that disclosure of the information is likely to cause substantial harm to the business's competitive position.

402 CONFIDENTIALITY OF INFORMATION:

- 402.2 Any records, reports or information obtained from any person under these rules shall be available to the public ... unless a person:
- a. Precisely identifies the information in the permit(s), records, or reports which is considered confidential.
 - b. Provides sufficient supporting information to allow the Control Officer to evaluate whether such information satisfies the requirements related to trade secrets as defined in Section 200.107 of this rule.

For emissions inventory information to be kept confidential, the following must be done:

- Specific data which you request be held confidential must be identified by marking an "X" in the corresponding gray confidentiality box(es) on the relevant report forms. Only data in fields with a gray confidentiality box is eligible to be held confidential.
- Provide a written explanation which gives factual information satisfactorily describing why releasing this information could cause substantial harm to the business's competitive position.
- Use the gray-shaded boxes on the reporting forms to indicate which data are to be held confidential. Do NOT stamp "Confidential", highlight data, or otherwise mark the page.

No data can be held confidential without proper justification.

ADDITIONAL RESOURCES AND ASSISTANCE:

The Maricopa County Emissions Inventory Web page at www.maricopa.gov/envsvc/air/ei.asp contains additional reference materials, such as:

- blank copies of most emissions reporting forms.
- this document, "Instructions for Reporting 2002 Annual Air Pollution Emissions".
- an updated list of emission factors for a large number of industrial processes, including SCC codes.
- a list of Tier Codes for industrial processes.
- detailed help sheets for a number of specific industries or processes.

To receive any of the above materials by fax or mail, or for additional information or assistance in how to calculate and report your emissions, please call us at (602) 506-6790.

IV. INSTRUCTIONS FOR COMPLETING COUNTY EMISSIONS INVENTORY FORMS

Business Form Instructions

Verify all preprinted information, and make corrections where necessary. When making corrections, strike out the preprinted data and write in corrections beside it. Please make all changes readily noticeable.

NOTE: Indicating a change in ownership or business location on the Business Form will ***not*** serve to transfer the permit ownership or location. You must contact the Department's Business Services Office at (602) 506-6464 to accomplish this.

Data fields:

- 6 Number of employees: This should be the annual average number of full-time equivalent (FTE) employee positions.
- 9 NAICS Code: This 5- or 6-digit North American Industrial Classification System (NAICS) code has been introduced to replace the 4-digit Standard Industrial Classification (SIC) codes. Please list the primary and secondary NAICS codes for your business, if known.
- 10 Preparer of the Inventory (primary contact for technical questions concerning this report): This should be the person who knows the most about the data in the report. If this person has an e-mail address used for business purposes, please provide it.

Stack Form Instructions

A “stack” is defined as a stack, pipe, vent or opening through which a significant percentage of emissions (from one or more processes) are released into the atmosphere (with or without a control device).

NOTE: Stack information is required only if your business location annually emits over 10 tons of any one of the following pollutants: CO, VOC, NO_x, PM₁₀, or SO_x. If so, you must complete a Stack Form for:

- each stack connected to a control device.
- any stack that discharges annually more than 5 tons of combined pollutant emissions (such as a paint booth exhaust).

EXAMPLE Stack Form Information:

1	2	3	4	5a OR 5b	6a OR 6b & 6c	7		
Stack ID	Stack Type Code*	Stack Height**	Exit Gas Temperature	Velocity feet/sec	Flow Rate acfm	Diameter inside inch	Length / Width inside inch	Stack Name/Description (Optional)
1	W	30 ft	90 °F		20,000	36		paint booth
2	V	14 ft	200 °F		19,186	40		thermal oxidizer

* Stack Type Codes: **V** = Vertical unobstructed **H** = Horizontal unobstructed
 D = Downward unobstructed **G** = Gooseneck
 W = Obstructed vertical (e.g. weather cap)

** Stack height is calculated relative to the surrounding terrain. For instance, the stack height of a 10-foot stack on top of a 20-foot tall building is 30 feet.

Data fields:

1 Stack ID: (See "Assigning Identification Numbers" on page 3.) A number (up to three digits, numeric only) which identifies a specific stack. It is suggested you start with 1, then 2, etc.

4 Exit Gas Temperature: Should represent average operating conditions.

5a Exit Gas Velocity: **OR** 5b Gas Flow Rate:

Provide **EITHER** the exit velocity (in feet per second) **OR** the flow rate of gas (in actual cubic feet per minute) exiting the stack during normal operations. Preprinted information provides both.

6a Inside Stack Diameter: For round stacks, provide Inside Stack **Diameter** in inches.

OR

6b & 6c Inside Stack Length and Width: For square or rectangular stacks, provide inside **Length and Width** in inches. Preprinted information also provides the calculated diameter of an equivalent circle.

Control Device Form Instructions

EXAMPLE Control Device Form Information

1	2	3	4	5	6
Control ID	Installation/ Reconstruction* Date	Size or Rated Capacity**	Control Type Code	Control Device Name/Description	Stack ID
1	05/09/98	25,000.0 cfm	021	Thermal oxidizer	2
4	03/10/97	cfm	153	Watering with water trucks	

Data fields:

- 1 **Control ID:** (See "[Assigning Identification Numbers](#)" on page 3.) A unique number (up to three digits) that you assign to identify a specific control device.
- 2 **Installation/Reconstruction Date:** The completion date (given in *mm/dd/yy* format) of installation or the most recent reconstruction of the identified control device. This is not a date on which routine repair or maintenance was done. Reconstruction means any component of the control device was replaced and the cost (fixed capital) of the new component(s) was more than half of what it would have cost to purchase or construct a new control device.
- 3 **Size or Rated Capacity:** Report the air or water flow rate in ***cubic feet per minute***. Some devices (e.g., water trucks for dust control) will not include a value in this field.
- 4 **Control Type Code:** A 3-digit code designating the type of control device. A complete list of all EPA control device codes can be found on the Web at <http://www.maricopa.gov/envsvc/AIR/EI/eiguides.asp> or call 602-506-6790 for assistance.
- 6 **Stack ID:** Not all businesses require a Stack ID. This is required if the Stack Form is required for your site (see page 7) **and** the control device has a vent. This is the ID number shown in column 1 of the Stack Form to identify the specific stack that this control device vents to. The Stack ID can be entered on this form after the Stack Form has been filled out.

General Process Form Instructions

The General Process Form is used to record data on all emissions-producing processes except evaporative processes. A **general** process is normally characterized by the burning or handling of a material. One form reports all the pollutants for one process. For example, several pollutants are produced by burning fuel, and PM₁₀ is emitted by processing rock products, processing materials such as wood or cotton, and driving on unpaved areas.

Data fields: (See sample forms on pages 11 and 12.)

- 1 Process ID: A number (up to three digits) that is preprinted or you assign. (See "Assigning Identification Numbers" on page 3.) This Process ID number can NOT be used for any other process at this location.
- 3 Stack ID(s): The stack ID number(s) shown in column 1 of the Stack Form that identify the stack(s) which vent pollution created by this process. Not all businesses are required to report stacks. This is only required if the Stack Form is required for your site (see page 7) **and** the process has a stack.
- 4 Process Tier Code and If these codes are not preprinted on your form, please consult our web
5 SCC Code: page at www.maricopa.gov/envsvc/air/ei.asp or call (602) 506-6790.
- 6 Seasonal Throughput Percent: Enter the percent of total annual operating time that occurred per season, rounded to the nearest percent. For example, "Dec-Feb 30%" means 30% of total annual process activity occurred between December and February. The total for all four seasons must equal 100%.
- 7 Normal Operating Schedule and These represent the usual number of hours and time of day
8 Typical Hours of Operation: when **this process** occurred during the calendar year.
- 9 Emissions Based on: Provide the **name** of the material used, fuel used, product produced, or whatever was measured for the purpose of calculating emissions, such as "hours of operation," "vehicle miles traveled," or "acres."
- 10 Used or Produced: Indicate whether calculated emissions are based on a material type *used*, a fuel *used* or a product *produced*. *Leave this field blank* if "hours of operation," "vehicle miles traveled," "acres," or similar unit of measurement is used.
- 11 Annual Amount: The annual amount (a mathematical number) of material that was used, fuel combusted, product produced, hours of operation, vehicle miles traveled, or acres.
- 12 Unit of Measure: Units of the material used, fuel used or product produced shown on line 9. For example: gallons, pounds, tons, therms, acres, vehicle miles traveled, units produced.
- 13 Unit Conversion Factor: You must provide this if you use an emission factor with an emission factor unit (see item 16 below) that is **not** the same as the unit of measure (from line 12). This is the standard number you would multiply your amount (line 11) by to convert it to the units of the emission factor. These are some common unit conversion factors:

	<u>Unit Conversion Factor:</u>
– To convert gallons to Mgal. (1,000 gallons)	Multiply by: 0.001
– To convert pounds to tons	Multiply by: 0.0005
– To convert therms to MMCF (million cubic feet) of natural gas	Multiply by: 0.0000952

General Process Form Instructions (continued)

- 14 Pollutant: See page 3 for a list of pollutants that need to be reported.
- 15 Emission Factor (EF): The number to be multiplied by the annual amount (line 11) to determine how much of the pollutant was emitted. If you calculate your own emission factor or change the preprinted emission factor, you must provide details of your calculations on an attachment.
- 16 Emission Factor (EF) Units: Enter the appropriate Emission Factor Units in pounds (lb) per unit; e.g., lb/ton, lb/MMCF, lb/gal.
- 17 Controlled Emission Factor (EF)? YES or NO: Indicate "YES" if: 1) you have your own emission factor from testing **and** included the control device efficiency within the factor, or 2) the emission factor used is clearly identified as a controlled emission factor. A "YES" response requires the use of Formula A (see #24 below). Indicate "NO" if: 1) there is no emission control device, or 2) the EF represents emission rates **before** controls. A "NO" response requires the use of Formula B (see #24 below).
- 18 Calculation Method: Enter the number code (listed at the bottom of the General Process Form) which best describes the method you used to obtain this emission factor. Code 5, "AP-42/FIRE Method or Emission Factor" means that the factor comes from EPA documents or software. **NOTE**: If you have conducted a source test that was required and approved by the County for a specific process or piece of equipment, you **must** use the emission data from that test. Report "4" in this column.
- 19 through 23: Leave blank if there is no control device.
- 19 Capture % Efficiency: The percent of the pollutant that is captured and sent to the primary control device in this process. Be sure to list a capture efficiency separately for **each** pollutant affected.
- 20 Primary Control Device ID: If this pollutant is being controlled in this process, enter the Control Device ID number which represents the first control device affecting the pollutant.
- 21 Secondary Control Device ID: If this pollutant is being controlled sequentially by 2 devices, enter the Control Device ID number which represents the second control device; otherwise leave this field blank.
- 22 Control Device(s) % Efficiency: Enter the total control efficiency of the control device(s). Be sure to list a control device efficiency separately for **each** pollutant affected. If you report a control device efficiency, you must **also** show a capture efficiency in column 19.
- 23 Efficiency Reference Code: Enter the code (1 through 7) that best describes how you determined the **control device efficiency**. A list of possible codes is included at the bottom of the form.
- 24 Estimated Actual Emissions (in pounds/year): You may round the calculated emissions values to the nearest pound. Calculate as follows:
- A. Emissions with no controls or controls are reflected in the emission factor:
Column 24 = line 11 × line 13 × column 15
- B. Emissions after control:
Column 24 = line 11 × line 13 × column 15 × (1 – [column 19 × column 22])
Use the decimal equivalent for columns 19 and 22. Example: 96.123% = 0.96123

General Process Form 2002

EXAMPLE: Internal CombustionPermit number(s) 999999

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1- Process ID 802- Process Type/Description: 3 engines for crushing (each less than 600 HP), diesel @ 0.05% sulfur content

3- Stack ID(s) (only if required on Stack Form) _____

4- Process TIER Code: 020599**FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION**5- SCC Code 20200102 (8 digit number) **IND:DIESEL-RECIPROCATING**6- Seasonal Throughput Percent: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %7- Normal Operating Schedule: Hours/Day 8 Days/Week 5 Hours/Year 20808- Typical Hours of Operation: (military time) Start 0700 End 15309- Emissions based on (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") DIESEL10- ☒ Used (input) or ☐ Produced (output)11- Annual Amount: (a number) 16,25012- Unit of Measure: (for example: tons, gallons, million cu ft, acres, units produced, etc.) GALLONS13- Unit Conversion Factor (if needed to convert Unit of Measure to correlate with emission factor units) 0.001

Emission Factor (EF) Information					Control Device Information					
14	15	16	17	18	19	20	21	22	23	24
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lb per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	130	M GALS	N	5						2,113 lbs
NOx	604	M GALS	N	5						9,815 lbs
PM-10	42.5	M GALS	N	5						691 lbs
SOx	39.7	M GALS	N	5						645 lbs
VOC	49.3	M GALS	N	5						801 lbs

* Calculation Method Codes:

- 1 = Continuous Emissions Monitoring Measurements
- 2 = Best Guess / Engineering Judgment
- 3 = Material Balance
- 4 = Source Test Measurements (Stack Test)
- 5 = AP-42 / FIRE Method or Emission Factor
- 6 = State or Local Agency Emission Factor
- 7 = Manufacturer Specifications

** Control Efficiency Reference Codes:

- 1 = Tested efficiency / EPA reference method
- 2 = Tested efficiency / other source test method
- 3 = Design value from manufacturer
- 4 = Best guess / engineering estimate
- 5 = Calculated based on material balance
- 6 = Estimated, based on a published value

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1- Process ID 28

☐ 2- Process Type/Description: UNPAVED ROAD TRAVEL: HEAVY-DUTY TRUCKS @ 15 MPH

3- Stack ID(s) (only if required on Stack Form) _____

4- Process TIER Code: 140799 MISCELLANEOUS: FUGITIVE DUST

5- SCC Code 30502504 (8 digit number) SAND/GRAVEL: HAULING

6- Seasonal Throughput Percent: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %

7- Normal Operating Schedule: Hours/Day 8 Days/Week 5 Hours/Year 2080

8- Typical Hours of Operation: (military time) Start 0700 End 1530

☐ 9- Emissions based on (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") VEHICLE MILES TRAVELED (VMT)

10- ☐ Used (input) or ☐ Produced (output)

☐ 11- Annual Amount: (a number) 7,500

12- Unit of Measure: (for example: tons, gallons, million cu ft, acres, units produced, etc.) VMT

13- Unit Conversion Factor (if needed to convert Unit of Measure to correlate with emission factor units) _____

Emission Factor (EF) Information					Control Device Information					
14	15	16	17	18	19	20	21	22	23	24
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lb per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10	3.2	VMT	N	6	100	4		70	6	7200 lbs
										lbs
										lbs
										lbs
										lbs
										lbs

NOTE: Emissions in col. 24 are calculated as follows: (line 11 × col. 15) × (1 - [col. 19 × col. 22])

*** Calculation Method Codes:**

- 1 = Continuous Emissions Monitoring Measurements
- 2 = Best Guess / Engineering Judgment
- 3 = Material Balance
- 4 = Source Test Measurements (Stack Test)
- 5 = AP-42 / FIRE Method or Emission Factor
- 6 = State or Local Agency Emission Factor
- 7 = Manufacturer Specifications

**** Control Efficiency Reference Codes**

- 1 = Tested efficiency / EPA reference method
- 2 = Tested efficiency / other source test method
- 3 = Design value from manufacturer
- 4 = Best guess / engineering estimate
- 5 = Calculated based on material balance
- 6 = Estimated, based on a published value

Evaporative Process Form Instructions

The Evaporative Process Form is used to report all emissions produced by evaporation. Examples include: cleaning with solvents, painting and other coatings, printing, using resin, evaporation of fuels from storage tanks, ammonia use, etc. All other processes should be shown on the General Process Form.

One Evaporative Process Form may be used to report numerous materials, with each material given a separate process ID number, as long as the information on lines 1-6 apply to all items on that form. Use a separate form for each group of materials that has a different Process Type/Description (shown on line 1), different Tier Code (line 2) or different operating schedule (lines 3, 4, or 5). Storage tank emissions also must appear on a separate form (see 6 below).

Data fields: (See sample forms on pages 15 and 16.)

- 1 Process Type/Description: Brief details of the activity in which the listed materials were used.
- 2 Process Tier Code: If this 6-digit code is not preprinted on your form, please refer to the Tier Code list at www.maricopa.gov/envsvc/air/ei/eiguides.asp or call (602) 506-6790.
- 3 Seasonal Throughput Percent: Enter the percent of total annual operating time that occurred per season (rounded to the nearest percent). For example, "Dec-Feb 30%" means 30% of total annual process activity occurred between December and February. The total for all four seasons must equal 100%.
- 4 Normal Operating Schedule and These represent the usual number of hours and time of day when
5 Typical Hours of Operation: the emissions reported on **this form** occurred during the year.
- 6 Storage Tanks: Report emissions from storage of VOC liquids only for tanks larger than 250 gallons. Mark only one category of tank installation, using an additional form per category if needed. "Vaulted" here means the tank is completely enclosed in a building or by thermal insulation. Do NOT include diesel or Jet A tanks with less than 4,000,000 gallons throughput per year. See the "Emissions Inventory Help Sheet for Fuel Storage and Handling" for more specific instructions applicable for fuel tanks up to 15,000 gallons capacity. Bulk plants and terminals should consult the "Help Sheet for Reports Using EPA's TANKS 4.09b Program" or the "Help Sheet for Large Aboveground Storage Tanks."
- 7 Process ID: A number (up to three digits) that represents this specific material (process). Each process on one form must have the same tier code and operating schedule as that shown in the top portion of the form. This Process ID number can **not** be used for any other process at this business location. See page 3 of these instructions for more explanation of ID numbers and page 4 for exclusions and guidance on grouping materials.
- 8 Stack ID(s): The stack ID number(s) shown in column 1 of the Stack Form that identify the stack(s) which vent pollution created by this process. Not all businesses are required to report stacks. This is only required if the Stack Form is required for your site (see page 7) **and** the process has a stack.
- 9 Material Type: Provide the name of the material used in this process. Give the chemical name for pure chemicals or a name that reflects its use (paint, ink, etc.), rather than just a brand name or code number. Examples of materials include: paint, thinner, degreasing solvent (plus its common name), ink, fountain solution, ammonia, alcohol, ETO (ethylene oxide), gasoline (in a storage tank).
- 10 Annual Material Usage/Input: Amount of this material used during the year. In most cases, the amount purchased is suitable. Write in "lbs" or "gal" (pounds or gallons).

Evaporative Process Form (continued)

- 11 Pollutant: The only pollutants reported on this form are VOC, HAP&NON and NH_x (see definitions on page 3). When one process (or material) has more than one of these pollutants, list each pollutant on a separate line, using the same process ID number.
- 12 Emission Factor (EF): An emission factor is a number used to calculate the pounds of pollutant emitted based on the quantity of material used in a process. Emission factors can be obtained from your supplier (usually provided on a Material Safety Data Sheet or environmental data sheet), and must correspond with the material units reported in column 10. If the material unit is “gal,” then the emission factor must be in pounds of pollutant per gallon. If the material unit is “lb,” then the emission factor must be in pounds of pollutant per pound of material.
- Verify (and correct, where necessary) all pre-printed emission factors, as the composition of materials used may have changed since your last report. A “lb/gal” emission factor is almost always less than 8 and never greater than 14. A “lb/lb” emission factor is never larger than 1.0.
- 13 Pounds of pollutant sent off site: Required only if you wish to take credit for reduced emissions because of waste of this material sent off-site for recycling or disposal. Only waste generated during the report year may be claimed. The Off-Site Recycling/Disposal Form **must** be completed if you wish to claim a credit. The number of pounds reported in column 13 **must** equal the number of pounds reported on the Off-Site Recycling/Disposal Form(s) for the same Process ID number.
- 14 and 15: Leave these fields blank if there is no control device present.
- 14 Capture % Efficiency: The percent of the pollutant from this process that is captured and sent to the control device.
- 15 Control ID: If this pollutant is being controlled in this process, enter the Control Device ID number from column 1 of the Control Device Form.

Control % Efficiency: Enter the percent of this pollutant that is controlled by this control device.

Code: Select the Control Efficiency Reference Code from the list at the bottom of the form.

- 16 Estimated Emissions (lbs/yr): Estimated pounds of the pollutant emitted during the year, after off-site recycling/disposal and controls if applicable. **Credit will not be given for off-site recycling/disposal unless it is shown on the Off-Site Recycling/Disposal Form.** Round to the nearest pound. If the answer is 0, give a decimal answer to the first significant digit. Column 16 is calculated as follows:

Emissions without off-site recycling/disposal or controls:

Column 16 = column 10 × column 12

Emissions with off-site recycling/disposal:

Column 16 = (column 10 × column 12) – column 13

Emissions with off-site recycling/disposal **and** controls:

Column 16 = ([column 10 × column 12] – column 13) × (1 – [column 14 × column 15])

Use the decimal equivalent for columns 14 and 15. Example: 96.123% = 0.96123

EXAMPLE: Coating and Painting

Evaporative Process Form 2002

Permit number(s) 999999

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1- Process Type/Description: Coating metal widgets

2- Process TIER Code: 080415

SOLVENT USE: SURFACE COATING - MISC METAL PARTS

3- Seasonal Throughput Percent: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %

4- Normal Operating Schedule: Hours/Day 8 Days/Week 5 Hours/Year 2080

5- Typical Hours of Operation (military time) Start 0800 End 1700

6- For STORAGE TANKS only. Select only one: ☐ Above Ground Vaulted ☐ Under Ground ☐ Above Ground NON-Vaulted

NOTE: Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

C12: Place all data in any cell to main data requested to be held confidential. See instructions for requirements for information to be deemed confidential.														
7	8	9		10		11*	12		13	14	15		16	
Process ID	Stack ID(s)	Material Type		Annual Usage Input	lb or gal	VOC, HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
800	1	lacquer		95	gal	VOC	4.7	1b/gal		%		%		447
801	1	lacq thinner		120	gal	VOC	7.1	1b/gal		%		%		852
802	1	paint		940	gal	VOC	4.2	1b/gal		%		%		3,948
803	1	pnt thinner		707	gal	VOC	7.0	1b/gal		%		%		4,949
804	1	powder paint		20,200	lb	VOC	.001	1b/lb		%		%		20
										%		%		

Note: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-site Recycling/Disposal Form to receive credit for reduced emissions.

NOTE: Emissions in col. 16 are calculated as follows: $([col. 10 \times col. 12] - col. 13) \times (1 - [col. 14 \times col. 15])$

**** Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method

2 = Tested efficiency / other source test method

3 = Design value from manufacturer

4 = Best guess / engineering estimate

5 = Calculated based on material balance

6 = Estimated, based on a published value.

EXAMPLE: Cleaning solvent (with recycling)

Evaporative Process Form 2002

Permit number(s) 999999

1- Process Type/Description: Cleaning metal parts

2- Process TIER Code: 080103 SOLVENT USE: DEGREASING - COLD CLEANING

3- Seasonal Throughput Percent: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %

4- Normal Operating Schedule: Hours/Day 4 Days/Week 5 Hours/Year 1040

5- Typical Hours of Operation (military time) Start 1300 End 1700

6- For STORAGE TANKS only. Select only one: ☐ Above Ground Vaulted ☐ Under Ground ☐ Above Ground NON-Vaulted

NOTE: Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

7	8	9		10		11*	12		13	14	15		16		
Process ID	Stack ID(s)	Material Type		Annual Usage Input		lb or gal	VOC, HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
3	2	sanitizer		716		1b	VOC	1.0	1b		95 %	1	80 %	3	172
6		gun cleaner		180		g1	VOC	7.2	g1	448	%		%		848
7		xyz stripper		1300		g1	VOC	3.3	g1	3,237	%		%		1,053
8		cleaning solvents		358		g1	VOC	6.4	g1	892	%		%		1,399
9		generoclean		2258		g1	VOC	6.8	g1	5,623	%		%		9,731
											%		%		

Note: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-site Recycling/Disposal Form to receive credit for reduced emissions.

NOTE: This example shows the case where 2,400 of the original 4,096 gallons of materials #6 through 9 were captured for off-site recycling, and the pollutant content of the waste material was estimated to be 75% of the original. The pounds of pollutant sent off-site shown in column 13 is calculated on the example Off-Site Recycling/Disposal Form on the next page.

EXAMPLE

Off-Site Recycling/Disposal Form 2002

Permit number(s) 999999

NOTE: If you need blank copies of this form, call the Emissions Inventory Unit at (602) 506-6790 or consult our web page at www.maricopa.gov/envsvc/air/ei.asp. If any waste streams contain a significant amount of solid material (recorded in pounds), contact the Emissions Inventory Unit for assistance in how to report these materials.

Provide one copy of this form for each waste stream at your business location. Make copies of this page as needed.

A waste stream is the liquid waste from one or more processes mixed together to make one liquid waste product before it is taken off site for recycling, disposal or combustion.

1) Assign a unique one or two-digit ID number to identify the waste stream that will be described below. 01
(Start with ID# 1 for first waste stream, then use 2 for second, etc.)

2) How many gallons of liquid waste did this waste stream produce in 2002? 2,400 gallons.
Keep waste disposal company manifests as proof that this amount of liquid waste was taken off-site.

3) What was the **average** pollutant content of the liquid waste stream?

VOC 4.25 lbs/gal HAP&NON _____ lbs/gal NHx _____ lbs/gal

NOTE: Liquid waste normally has less pollutant content than the new product. Some of the pollutant evaporates during the use of the product, and there is usually dirt, water and/or other contaminants in the liquid waste. The estimated pollutant content of the liquid waste is usually between 50% and 95% of the new product. This example estimates an average VOC content (reported on line 3) to be 75% of the original VOC content of 5.67 lbs/gal., to account for evaporation and contaminants. See the example on page 18 to calculate a weighted average.

4) Calculate the total annual pollutant content of the liquid waste in this waste stream.
(volume of liquid waste, from line 2) × (pollutant content, from line 3) = Total pollutants in waste stream, in lbs/yr.

VOC 10,200 lbs/yr HAP&NON _____ lbs/yr NHx _____ lbs/yr

5) List the process ID numbers of the processes contributing to this waste stream. Also estimate the pounds of pollutant that each process contributed to this waste stream.

NOTE: Column totals in the table below must equal the total for each pollutant type reported on line 4. The quantities you report below for each pollutant and process must also be reported in column 13 on the Evaporative Process Form.

Process ID	Annual VOC (lbs)	Annual HAP&NON (lbs)	Annual NHx (lbs)
6 Contributed about	448 lbs	lbs	lbs
7 Contributed about	3,237 lbs	lbs	lbs
8 Contributed about	892 lbs	lbs	lbs
9 Contributed about	5,623 lbs	lbs	lbs
Contributed about	lbs	lbs	lbs
Contributed about	lbs	lbs	lbs
Contributed about	lbs	lbs	lbs

EXAMPLE: Documentation of Emission Factor Calculations

Identify the process ID(s) and pollutant(s). Show calculations made to obtain the emission factors used for the process(es). Include references to data sources used, including the document name, date published, page numbers, etc.

Emission Factor Calculation

Process ID 201

Permit number 999999

Emission factors derived from source test performed 6/12/97 by XYZ Engineering Company (copy of summary tables also attached).

Outlet (after controls):

$$\begin{aligned}\text{CO} &= 0.43 \text{ lb/hr} \times 1 \text{ hr/60 min} \times 1 \text{ min/77.9 cu. ft} \times 1,000,000 \text{ cu. ft/MMCF} \\ &= 92.0 \text{ lb/MMCF}\end{aligned}$$

$$\begin{aligned}\text{NOx} &= 0.09 \text{ lb/hr} \times 1 \text{ hr/60 min} \times 1 \text{ min/77.9 cu. ft} \times 1,000,000 \text{ cu. ft/MMCF} \\ &= 19.3 \text{ lb/MMCF}\end{aligned}$$

NOTE: The example below shows how the weighted average of the materials going into the waste stream is calculated. A weighted-average emission factor has been calculated by listing usage amounts and emission factors for each material, summing each column, and then dividing the total emissions by the total gallons used.

In this example: $23,232 \text{ lbs} \div 4,096 \text{ gal} = 5.67 \text{ lb/gal}$ average VOC content. This emission factor is then used to calculate the average pollutant content in the Off-site Recycling / Disposal Form example.

This process can also be used to find the weighted average emission factor for similar materials if you are reporting them together as a single line item on the Evaporative Process form. Refer to the explanation of grouping on page 4.

Process ID 8

Material Type	2002 Usage	Units	VOC (lbs/unit)	VOC Emissions (= Usage × VOC content)
gun cleaner	180	gal	7.2	1,296 lbs.
xyz stripper	1,300	gal	3.3	4,290
cleaning solvent	358	gal	6.4	2,291
generoclean solvent	2,258	gal	6.8	15,354
Totals:	4,096	gal		23,231 lbs.

Average VOC content:	$\frac{23,231 \text{ lbs.}}{4,096 \text{ gals}}$	=	5.67 lb/gal
-----------------------------	--	----------	-----------------------

Calculating an emission fee:

- If your total emissions on line 6 of the Data Certification/Fee Calculation Form are less than 10,000 lbs., you have no emission fee to pay.
- If your total emissions from line 6 are 10,000 lbs. or more, divide the total emissions by 2000 to convert pounds into tons of VOC. **Round to the nearest ton.** Multiply this number by \$38.69 to calculate your emission fee.

The table below summarizes annual emission fees for reports up to 25 tons:

If your annual emissions total in POUNDS is:	Your annual total in TONS is:	Your 2002 emissions fee is:
Less than 10,000 lbs.		\$0.00
between 10,000 – 10,999.9 lbs.	5	\$193.45
between 11,000 – 12,999.9 lbs.	6	\$232.14
between 13,000 – 14,999.9 lbs.	7	\$270.83
between 15,000 – 16,999.9 lbs.	8	\$309.52
between 17,000 – 18,999.9 lbs.	9	\$348.21
between 19,000 – 20,999.9 lbs.	10	\$386.90
between 21,000 – 22,999.9 lbs.	11	\$425.59
between 23,000 – 24,999.9 lbs.	12	\$464.28
between 25,000 – 26,999.9 lbs.	13	\$502.97
between 27,000 – 28,999.9 lbs.	14	\$541.66
between 29,000 – 30,999.9 lbs.	15	\$580.35
between 31,000 – 32,999.9 lbs.	16	\$619.04
between 33,000 – 34,999.9 lbs.	17	\$657.73
between 35,000 – 36,999.9 lbs.	18	\$696.42
between 37,000 – 38,999.9 lbs.	19	\$735.11
between 39,000 – 40,999.9 lbs.	20	\$773.80
between 41,000 – 42,999.9 lbs.	21	\$812.49
between 43,000 – 44,999.9 lbs.	22	\$851.18
between 45,000 – 46,999.9 lbs.	23	\$889.87
between 47,000 – 48,999.9 lbs.	24	\$928.56
between 49,000 – 50,999.9 lbs.	25	\$967.25

EXAMPLE**Data Certification/Fee Calculation Form 2002**Permit number 999999

For EACH pollutant listed, total up all emissions recorded on your General Process and Evaporative Process Forms. Enter these numbers in column 1, "Totals from Process Forms." Report any emissions from accidental releases in column 2.

Add the figures in each row across, and enter the result in column 3, "Total Emissions".

Carefully follow the instructions on lines 6 through 8 to calculate any emission fee owed.

NOTE: "Accidental Releases" reported in column 2 should include all excess emissions reported to the Department under Rule 140, Section 500.

Summary of 2002 Annual Emissions:	(1) Totals from Process Forms	(2) + Accidental Releases	(3) = TOTAL 2002 Emissions
CO	2,113	0	2,113
NH _x		0	
Lead		0	

Emissions fees are based on your emissions of the following pollutants ONLY:

1	HAP&NON		0	
2	VOC	24,220	0	24,220
3	NO _x	9,815	0	9,815
4	SO _x	645	0	645
5	PM ₁₀	7,891	0	7,891
6	Add "TOTAL" column from lines 1 through 5 ONLY:			42,571 lbs.
7	If line 6 is less than 10,000 pounds, no emission fee is due. Enter zero (0) on line 8. If line 6 is 10,000 pounds or more, divide line 6 by 2000 (pounds per ton) to get tons, and round the number to the nearest ton. (Drop any decimal .499 or less. Increase to the next whole number any decimal of .500 or more.) Enter the resulting WHOLE NUMBER here.			21 TONS
8	Multiply line 7 (a WHOLE number) by \$ 38.69. This is your 2002 ANNUAL EMISSIONS FEE . NOTE: If your total annual emissions are less than 10,000 lbs., no emissions fee is due.			\$ 799.68

NOTE: Review specific requirements for data confidentiality on page 5. We cannot hold any data confidential without the required documentation.

TO COMPLETE YOUR EMISSIONS INVENTORY REPORT:

- If your annual emissions are 10,000 lbs. or more, include a check (made payable to Maricopa County Environmental Services) for the amount calculated on line 8 above.
- Complete the Confidentiality Statement below.
- Sign and date this form below where indicated.
- Send the **original** copy of your completed forms, along with any emission fee due to: Maricopa County Environmental Services Dept., Emissions Inventory Unit, 1001 No. Central Ave., Suite 100, Phoenix, AZ 85004. Keep a copy of all forms for your records.

CONFIDENTIALITY STATEMENT:

This annual emissions report contains requests to keep some data confidential. ☐ YES ☒ NO

If you check "YES", you must submit documentation and meet certain requirements before your data can be deemed confidential. See enclosed instructions for further details.

NOTE: The Data Certification form must be signed by a responsible company official.

CERTIFICATION STATEMENT:

I declare under penalty of perjury that the data (e.g. inputs, emission factors, controls, and annual emissions) presented herein represents the best available information and is true, accurate and complete to the best of my knowledge.

Signature of owner/business officer

Date of signature

Telephone number

Type or print full name of owner/business officer

Type or print full title

Appendix 2.2
Rule Effectiveness Evaluation Form
Point Sources

RULE EFFECTIVENESS EVALUATION FORM
Point Sources

Source Category _____
Source Name _____
Source Location _____
Source Identifier _____

Choose the one most appropriate response for each question. Answers should be confirmed by information in the State or local agency's files. When the questionnaire has been completed, total the scores to determine RE for the source; the average score for all evaluated sources in a category is the RE for that category.

Preliminary Screening:

1. Is this source currently uncontrolled? _____ No
_____ Yes
(If "yes", choose another source to evaluate, and indicate a RE of 0 percent for this source in the inventory.)
2. Are emissions from this source controlled _____ No
by an irreversible process change? _____ Yes
(If "yes", choose another source to evaluate, and indicate a RE of 100 percent for this source in the inventory.)
3. Have emissions from this source been _____ No
calculated by means of a direct determination? _____ Yes
(If "yes", choose another source to evaluate, do not apply RE to this source, and indicate a RE of 100 percent in the inventory.)¹

A. Nature of the Regulation

1. Does the regulation contain uncorrected deficiencies (not including record keeping deficiency) as specified in the SIP-call follow-up letter from the EPA Regional Air Division Director to your State Air Program Director?

_____ No (5)
_____ Yes or unsure (0) Score _____

¹ If a source's emissions have been estimated using direct determination, maintain the supporting data and calculations in your files.

2. Does the State require source to keep records sufficient to enable an inspector to determine compliance status?

_____ Yes (5)
_____ No or unsure (0)

Score _____

3. How complex is the determination of compliance? (If State can verify through detailed records that all necessary compliance determination procedures have been carried out, score 5 points for this question regardless of answer checked below.)

_____ Determination can be made by looking at facility, as in the case of an equipment standard. (5)

_____ Determination can be made by collecting and analyzing one sample or by evaluating continuous emission monitoring reports. (4)

_____ Stack testing, including capture and control, must be performed to determine compliance. (3)

_____ Determination requires that multiple samples be taken and analyzed and that plant records be evaluated, as in the case of cross-line averaging, time averaging, or other bubbles. (2)

Score _____

B. Nature of Procedures Used to Comply With Regulation

1. This question concerns the relative level of confidence in the long-term performance capabilities intrinsic to different control techniques (e.g., how time in operation and maintenance degradation might affect emissions control). (Check each technique used at the facility, total the scores assigned to each control, divide by the number of controls and report the average as a single score. If State can verify through detailed records that the source has actually been in continuous compliance at all times during the past two years, score 10 points on this question regardless of control methods used.)

_____ Floating roof (10)

_____ Thermal incinerator (8)

_____ Vapor balance (8)

_____ Reversible process change (e.g., coating reformulation) (8)

_____ Condensation system (7)

_____ Carbon adsorber (7)

_____ Catalytic incinerator (7)

_____ Other (assign point value ≤ 10 , as appropriate, relative to above controls) ()

Score _____

2. Are fugitive emissions that might cause noncompliance a possibility where add-on controls are used (check one)?

_____ No or not applicable because
there is no add-on equipment (5)
_____ No, because they have been shown by
an EPA-approved capture efficiency
test to be below allowable limits and
to be so on a continual basis (5)
_____ Yes or unsure (0)
Score _____

C. Performance of Source in Complying With Regulation

1. What procedures does the source follow for operation and maintenance (O&M) of the control equipment (check one)?

_____ Plant personnel complete a formal
training program and follow daily
written instructions for O&M (5)
_____ Same as above, except no training (4)
_____ Plant personnel follow weekly
established O&M routine (3)
_____ Equipment is assumed to be operating
correctly unless major malfunction
is detected (1)
Score _____

2. What is the nature of self-monitoring efforts conducted by the plant to assess compliance (check one)?

_____ Source test (using EPA-approved
method)² is conducted annually (5)
_____ Sample analysis (using EPA-approved
method)² is conducted for each ink
or coating used (5)
_____ Above tests are performed, but
less frequently (3)
_____ None or unsure (0)
Score _____

3. Does the plant keep records of data (including self-monitoring, O&M, coating usage, etc.) that would allow verification of compliance?

_____ Yes (5)
_____ No or unsure (0)
Score _____

²For examples of approved test methods, see "Test Methods or Procedures for Group I, II, and III CTG's," *Issues Relating to VOC Regulations, Cutpoints, Deficiencies, and Deviations*, EPA/OAQPS/AQMD/OCMPB/PIS, May 25, 1988.

³Ibid.

4a. Has source been found to be out of compliance in the last 12 months? (If "yes", then answer question 4b; otherwise, skip to Part D)

☐ No (10)
☐ Yes or unsure (0)

Score _____

4b. In responding to Notices of Violation, did the source demonstrate compliance within the required time frame? (Answer this question only if you answered "yes" to question 4a. above)

☐ Yes (5)
☐ No or unsure (0)

Score _____

D. Performance of Implementing Agency in Enforcing Regulation

1. Please answer the following questions regarding verification of the source's compliance?

a. Are all permits and abatement orders available? ☐ No (0)

☐ Yes or not applicable (2)
Score _____

b. Are all applicable requirements identified in the permit (e.g., emission limits, averaging times, compliance schedule, monitoring, recordkeeping, reporting, operation and maintenance, test requirements)? ☐ No (0)

☐ Yes or not applicable (2)
Score _____

c. Are accurate and complete flow diagrams available for the emission points and control, capture, ventilation and process systems? ☐ No (0)

☐ Yes or not applicable (2)
Score _____

d. Are all source test and sample analysis results available? ☐ No (0)

☐ Yes or not applicable (2)
Score _____

e. Are all appropriate control system operating data available? ☐ No

☐ Yes or not applicable (2)
Score _____

Total Score _____

2. What is the professional background of the person who most frequently inspects this source? (Choose the one most applicable answer with highest score.)

- ☐ Has \geq 3 years of experience in conducting plant inspections (5)
- ☐ Has engineering degree and has completed formal training program on how to conduct plant inspections (4)
- ☐ Has engineering degree (3)
- ☐ Has completed formal training program on how to conduct plant inspections (3)
- ☐ No training, < 3 years of experience, and no engineering degree (0)
- ☐ Unsure (0)

Score _____

3. How many times has source been inspected in the past 24 months? (Inspections must be confirmed by inspection reports in implementing Agency's file.)

- ☐ >2 times, unannounced (10)
- ☐ Once or twice, unannounced (8)
- ☐ Once or more, with prior notice or unknown if notice given (6)
- ☐ None or unsure (0)

Score _____

4. What was the highest level of inspection performed at the source in the last 24 months? (This must be confirmed by inspection reports in the implementing agency's file.)

- ☐ Level 4: sampling inspection including preplanned sample collection (5)
- ☐ Level 3: compliance evaluation (4)
- ☐ Level 2: walk-through (2)
- ☐ Level 1: observation from outside (1)
- ☐ None or unsure (0)

Score _____

5. Does the agency generally determine compliance by the method(s) specified in the regulation?

- ☐ Yes (5)
- ☐ No or unsure (0)

Score _____

6. If this source has been found out of compliance within the last 12 months, has formal documented enforcement action (e.g., consent decrees, variances, court actions, penalties) been taken against the source?

- ☐ Not applicable because source has not been found out of compliance (5)
- ☐ Yes (5)
- ☐ No or unsure (0)

Score _____

Appendix 3.1

2002 Maricopa County Agricultural Pesticide Application

2002 Maricopa County Agricultural Pesticide Application

EPA name	epanum	Active ingredient name	lbs_ai	type ²	sum_ac	county	adate1
Ridomil Gold Copper	100-804	Copper hydroxide	384.35	F	503.60	MAR	2/25/2002
2,4-D/Barrage	5905-529	2,4-D	246.75	H	652.30	MAR	3/9/2002
Fusilade DX	10182-367	Fluazifop-P-butyl	46.00	H	252.00	MAR	3/11/2002
Dual II Magnum	100-818	S-Metolachlor	61.12	H	65.00	MAR	3/26/2002
Furadan 4F	279-2876	Carbofuran	3,112.39	I	9,781.60	MAR	4/4/2002
2,4-D/Weedar 64	71368-1	2,4-D, Dimeth. salt	531.92	H	937.00	MAR	4/20/2002
Temik 15G	264-330	Aldicarb	202.50	I	73.00	MAR	4/24/2002
Nemacur 3 Turf	3125-283	Fenamiphos	90.00	I	54.00	MAR	5/31/2002
Comite (6.55EC)	400-104	Propargite	9,282.45	I	4,104.60	MAR	6/12/2002
Benlate SP	352-564	Benomyl	15.00	F	58.00	MAR	6/14/2002
Metasystox-R (2EC)	10163-220	Oxydemeton-methyl	145.00	I	291.20	MAR	6/14/2002
Dibrom 8 Emulsive	5481-479	Naled	7.20	I	32.00	MAR	7/13/2002
Thimet 20-G	241-257	Phorate	269.55	I	234.20	MAR	7/18/2002
MSMA 6 Plus	50534-6	MSMA	36.00	H	36.00	MAR	7/19/2002
Staple	352-576	Pyriothiobac-sodium	18.16	H	341.10	MAR	7/19/2002
Dipel DF	275-103	Bt (Bacillus thur.)	696,749.79	I	717.60	MAR	7/25/2002
Cy-Pro 4L	1812-366	Cyanazine	1,205.67	H	1,317.90	MAR	7/26/2002
Ammo 2.5EC	279-3027	Cypermethrin	43.13	I	581.00	MAR	7/27/2002
Hot Sauce Animal Repellent	72-574	Capsaicin	0.72	M	76.85	MAR	7/30/2002
Prefar 4E	10163-200	Bensulide	160.52	H	107.00	MAR	8/9/2002
Prowl 3.3 EC	241-337	Pendimethalin	9,358.79	H	10,378.00	MAR	8/15/2002
Cotton-Pro (4E)	1812-274	Prometryn	4,171.42	H	5,927.20	MAR	8/15/2002
AAtrex 4LC	100-497	Atrazine	2,792.20	H	2,345.70	MAR	8/27/2002
Clarity 4L	7969-137	Dicamba	1,558.57	H	5,502.60	MAR	8/29/2002
Sempre CA	524-465	Halosulfuron	2.17	H	50.50	MAR	9/4/2002
Capture 2EC	279-3069	Bifenthrin	306.28	I	3,907.60	MAR	9/5/2002
Kelthane MF	707-202	Dicofol	2,865.30	I	2,850.50	MAR	9/5/2002
Trilogy	70051-2	Neem oil	389.23	F	878.70	MAR	9/5/2002
Knack (aka Esteem 0.86EC)	59639-95	Pyriproxyfen	798.23	I	14,798.10	MAR	9/5/2002
Pix Plus	7969-173	Bacillus cereus	1,078,233.27	MG	11,832.80	MAR	9/7/2002
Pix Plus	7969-173	Mepiquat chloride	384.73	MG	12,113.30	MAR	9/7/2002
Larvin 3.2	264-379	Thiodicarb	55.94	I	92.30	MAR	9/8/2002
Decis 1.5EC	34147-12	Deltamethrin	9.38	I	389.00	MAR	9/10/2002
NoMate PBW MEC	55638-20	Gossypure	2.88	M	727.00	MAR	9/10/2002
NoMate PBW MEC	55638-20	Hexadecadien (Z,Z)	2.88	M	727.00	MAR	9/10/2002
Zephyr 0.15 EC	100-897	Abamectin	18.61	I	2,194.05	MAR	9/11/2002
Quadris (aka Abound)	10182-415	Azoxystrobin	379.00	F	1,782.00	MAR	9/12/2002
Kaligreen	70231-1	Potassium bicarbon.	1,385.39	F	304.90	MAR	9/20/2002
Princep DF TO	100-603	Simazine	94.50	H	60.00	MAR	9/20/2002
Trilin GRP (80%)	5905-250	Malathion	23,300.27	I	21,324.35	MAR	9/25/2002
Orthene 90 WSP	59639-86	Acephate	16,389.43	I	19,554.20	MAR	9/26/2002
Danitol 2.4 EC Spray	59639-35	Fenpropathrin	371.52	I	1,921.70	MAR	9/26/2002
Rally 40W	707-215	Myclobutanil	536.55	F	5,996.90	MAR	9/28/2002
Vydate C-LV (3.77lbs)	352-532	Oxamyl	1,754.78	I	2,127.50	MAR	9/28/2002
Lorsban 4E-HF	62719-220	Chlorpyrifos	6,551.78	I	37,227.70	MAR	10/11/2002
Microthial Special	4581-373	Sulfur	15,169.93	F	2,280.10	MAR	10/11/2002
Diazinon AG500 (4E)	34704-41	Diazinon	369.73	I	562.90	MAR	10/14/2002
Cytoplex HMS	58199-7	Cytokinins	0.05	M	3,774.55	MAR	10/18/2002
Cytoplex HMS	58199-7	Gibberellic acid	0.03	M	4,461.80	MAR	10/18/2002
Cytoplex HMS	58199-7	Indolebutyric Acid	0.03	M	4,461.80	MAR	10/18/2002
Topsin M 70W	4581-322	Thiophanate-methyl	915.12	F	2,598.10	MAR	10/18/2002

2002 Maricopa County Agricultural Pesticide Application (continued)

EPA name	epanum	Active ingredient name	lbs_ai	type ²	sum_ac	county	adate1
AIM	279-3194	Carfentrazone-ethyl	15.81	MD	2,199.20	MAR	10/23/2002
Endosulfan 3EC	51036-92	Endosulfan	16,011.42	I	14,593.70	MAR	10/23/2002
Dithane WF Turf & Ornamental	707-156	Mancozeb	2,221.85	F	1,009.25	MAR	10/23/2002
Roundup UltraMax	524-512	Glyphosate	14,651.47	H	17,420.30	MAR	11/2/2002
Asana XL (.66EC)	352-515	Esfenvalerate	384.27	I	9,267.40	MAR	11/8/2002
Dimethoate 4EC	5905-493	Dimethoate	7,909.68	I	21,147.40	MAR	11/16/2002
Accelerate	4581-284	Endothall	90.58	MD	2,727.80	MAR	11/18/2002
Ginstar EC	264-634	Diuron	2,273.42	MD	20,292.70	MAR	11/19/2002
Ginstar EC	264-634	Thidiazuron	1,456.74	MD	20,886.70	MAR	11/19/2002
Vapam HL	5481-468	Metam-sodium	59,239.39	MS	1,580.40	MAR	11/20/2002
Zorial Rapid 80 (DF)	55947-77	Norflurazon	976.94	H	898.20	MAR	11/20/2002
Cotton-Aide HC	17545-2	Cacodylic acid	64.00	MD	177.80	MAR	11/22/2002
Def 6	3125-282	Tribufos	7,003.40	MD	6,751.20	MAR	11/22/2002
CottonQuik (aka ETK-2201)	68891-7	Ethephon	3,638.04	MG	4,890.50	MAR	11/23/2002
CottonQuik (aka ETK-2201)	68891-7	Monocarbamide dihyd.	938.50	MG	760.00	MAR	11/23/2002
Starfire Concentrate (3.0L)	10182-372	Paraquat	315.27	MD	1,191.30	MAR	11/26/2002
Conclude B&G	7969-58	Acifluorfen	71.66	H	1,092.50	MAR	12/2/2002
Conclude B&G	7969-58	Bentazon	320.88	H	1,092.50	MAR	12/2/2002
Conclude B&G	7969-58	Sethoxydim	160.44	H	1,092.50	MAR	12/2/2002
Astro T&O 3.2EC	279-3014	Permethrin	1,555.93	I	14,953.70	MAR	12/4/2002
Butoxone 200 (2EC)	56077-26	2,4-DB	722.90	H	1,103.70	MAR	12/5/2002
Pursuit DG	241-350	Imazethapyr	344.84	H	4,899.90	MAR	12/5/2002
Baythroid 2 (EC)	3125-351	Cyfluthrin	201.29	I	5,802.60	MAR	12/6/2002
Eptam 20-G	10182-199	EPTC	2,261.57	H	1,120.80	MAR	12/6/2002
Warrior T	10182-434	Lambda-cyhalothrin	259.82	I	10,260.35	MAR	12/6/2002
Confirm 2F	707-238	Tebufenozide	28.38	I	250.20	MAR	12/7/2002
Telone II	62719-32	Dichloropropene	282,934.95	MS	5,173.15	MAR	12/8/2002
Raptor	241-379	Imazamox	85.05	H	1,968.90	MAR	12/10/2002
Sodium Chlorate 2lb	5905-87	Sodium chlorate	42,144.96	MD	8,876.20	MAR	12/12/2002
Goal 2XL	707-243	Oxyfluorfen	2.18	H	35.00	MAR	12/13/2002
Sencor DF (75%)	3125-325	Metribuzin	1,029.75	H	2,629.00	MAR	12/18/2002
Achieve 40DG	10182-426	Tralkoxydim	236.59	H	1,028.20	MAR	12/19/2002
Select 2 EC	59639-3	Clethodim	924.74	H	5,166.30	MAR	12/20/2002
Treflan HFP (aka Triap)	62719-250	Trifluralin	31,176.04	H	18,410.10	MAR	12/26/2002
Manex Maneb Flowable (4L)	1812-251	Maneb	1,982.66	F	1,497.90	MAR	12/27/2002
Success	62719-292	Spinosad	516.12	I	7,289.30	MAR	12/27/2002
Ridomil Gold EC	100-801	Chlorothalonil	8,380.39	F	2,768.60	MAR	12/28/2002
Provado 1.6 Flowable	3125-457	Imidacloprid	399.89	I	3,910.60	MAR	12/28/2002
Ridomil Gold EC	100-801	Mefenoxam	728.68	F	2,736.20	MAR	12/28/2002
Lannate (90WSP)	352-342	Methomyl	3,021.40	I	3,971.30	MAR	12/28/2002
Evergreen Emulsifiable 60-6	1021-1091	Piperonyl butoxide	748.13	PH	5,034.30	MAR	12/28/2002
Evergreen Emulsifiable 60-6	1021-1091	Pyrethrins	65.06	PH	4,735.50	MAR	12/28/2002
Mustang 1.5 EW	279-3126	Zeta-cypermethrin	137.80	I	3,077.80	MAR	12/28/2002
MCP Amine 4	228-143	MCPA	1,131.60	H	1,957.10	MAR	12/30/2002

¹ Source: Arizona Agricultural Statistical Service, 2003. Email from Clare Jervis, Statistician, (602) 280-8875; clare_jervis@nass.usda.gov, November 10, 2003.

² F= Fungicide; H=Herbicide; I=Insecticide; MS = Soil fumigant; PH = Pheromone; M=Misc., other; MD=Defoliant; MG=Growth regulator; MB=Bacterial

Appendix 3.2

2002 Fire Department Survey Results

Fire Department	Structure Fires	Vehicle Fires	Brush Fires	Approx. Acreage (per fire)	Boat Fires	Total acreage ⁶
Aguila Fire District	0	2	21	< 1 acre		2.1
Avondale Fire Department	83	104	42	unknown		4.2
AZ Bureau of Land Management		0	12	9.5 acres total		9.5
AZ State Land Dept.		2	35	115.75 total		115.8
Buckeye Fire Dept. ⁵	41	44	73			7.3
Buckeye Valley Rural Fire District	26	32	45	1		45.0
Chandler Fire Department	62	59	103	unknown		10.3
Circle City-Morristown Fire District ¹						
City of Phoenix Fire Department	1,754	3,338	4,323	unknown		432.3
Daisy Mountain Fire District	4	28	17	10		170.0
El Mirage Fire Department	6	6	20	0		2.0
Gila Bend Fire Department	15	18	55	0		5.5
Gilbert Fire Department	48	58	130	unknown		13.0
Glendale Fire Department	113	159	70	N/A		7.0
Goodyear Fire Department	17	43	28	0		2.8
Guadalupe Fire Department ²	18	26	60			6.0
Harquahala Valley Fire District	8	30	70	400 acres total		400.0
Laveen Fire Department ³	31	42	89			8.9
Luke AFB Fire Alarm Comm. Ctr.	10	9	0			0.0
Mesa Fire Department	271	439	623	N/A		62.3
Peoria Fire Department	70	129	183	unknown		18.3
Pleasant Harbor Marina	0	0	3	5	4	15.0
Rural Metro: West and East Valley ⁴	701	401	476			47.6
Sun City Fire District	51	7	24	3		72.0
Sun City West Fire Department	21	16	4			0.4
Sun Lakes Fire District	1	1	1			0.1
Surprise Fire Department	19	40	60	<1		6.0
Tempe Fire Dept	114	180	309	N/A		30.9
Tolleson Fire Department	87	50	76	2		152.0
Wickenburg Fire Dept.	12	30	60	0.5-1		6.0
Wickenburg Volunteer Fire Dept.						
Wittman Volunteer Fire Dept.	14	19	42	< 1		4.2
TOTAL	3,597	5,312	7,054		4	1,656.5

Notes:

¹ Survey data not available in 1996 or 1999, so fire data was not substituted.

² No 2002 data reported, pre-1996 data used.

³ Laveen fire department reported 162 total number of fire calls in 2002; 1999 percentages were used to allocate 2002 numbers as follows: 19% structure; 26% auto; 55% brush.

⁴ 1999 data was used for Rural Metro because no survey was returned from Rural Metro West Valley and Rural Metro East Valley only reported 156 structure fires and 27 brush fires in 2002

⁵ Brush fires include outside rubbish and equipment fires.

⁶ When acreage was not provided or data was incomplete or unclear, assumed each reported brush fire was equal to 0.1 acres.

Appendix 5.1

Traffic Information

HPMS
ARIZONA
02-01
CY 2002

SYSTEM LENGTH AND DAILY VEHICLE TRAVEL
INDIVIDUAL URBANIZED AREAS WITH GREATER THAN 50,000 POPULATION
(Aggregate length and travel information covering all public highways by class of road for each urbanized area)

Areawide
Table # 2

URBANIZED AREA NAME	POPULATION (1,000)	NET LAND AREA (SQ MILES)	DATA TYPE	FUNCTIONAL SYSTEM						
				PRINCIPAL ARTERIALS			MINOR ARTERIAL	COLLECTOR	LOCAL	TOTAL
				INTERSTATE	OTHER FREEWAYS & EXPRESSWAYS	OTHER				
PHOENIX	2,949	1,054	LENGTH	53	136	601	599	662	8,633	10,684
			TRAVEL (1,000)	8,998	13,530	17,890	10,309	5,636	6,975	63,338
TUCSON	709	312	LENGTH	20	15	172	309	195	2,384	3,095
			TRAVEL (1,000)	1,828	532	5,354	4,310	864	1,681	14,569
YUMA	88	34	LENGTH	4	-	22	24	19	249	318
			TRAVEL (1,000)	76	-	460	274	109	176	1,095
FLAGSTAFF	67	73	LENGTH	17	-	12	26	45	177	277
			TRAVEL (1,000)	468	-	298	151	153	132	1,202
			LENGTH							-
			TRAVEL (1,000)							-
TOTAL	3,813	1,473	LENGTH	94	151	807	958	921	11,443	14,374
			TRAVEL (1,000)	11,370	14,062	24,002	15,044	6,762	8,964	80,204

Units for defining length and travel in this report are miles and vehicle-miles (in thousands), respectively
 Figures shown originally submitted to Federal Highway Administration in October, 2003
 Figures may not add up to totals due to numerical rounding

HPMS
ARIZONA
03-2
CY 2002

SYSTEM LENGTH AND DAILY VEHICLE TRAVEL
FOR "DONUT" PORTION OF URBAN AREAS DESIGNATED AS NAAQS NON-ATTAINMENT AREAS
(Aggregate length and travel information covering all public highways by class of road for each urbanized area)

Areawide
Table # 3

DONUT AREA NAME	POPULATION (1,000)	NET LAND AREA (SQ MILES)	DATA TYPE	FUNCTIONAL SYSTEM						
				ARTERIALS			COLLECTORS		LOCAL	TOTAL
				INTERSTATE / URBAN FRWY	OTHER PRINCIPAL	MINOR	RURAL MAJ / MIN	URBAN		
PHOENIX	2,949	1,054	LENGTH	39	83	84	443	196	2,371	3,216
			TRAVEL (1,000)	1,830	972	965	1,753	631	543	6,694
TUCSON	709	312	LENGTH	37	17	21	257		1	333
			TRAVEL (1,000)	1,524	160	243	705		16	2,648
			LENGTH		-					-
			TRAVEL (1,000)		-					-
			LENGTH		-					-
			TRAVEL (1,000)		-					-
			LENGTH							-
			TRAVEL (1,000)							-
TOTAL	3,658	1,366	LENGTH	76	100	105	700	196	2,372	3,549
			TRAVEL (1,000)	3,354	1,132	1,208	2,458	631	559	9,342

Units for defining length and travel in this report are miles and vehicle-miles (in thousands), respectively
 Figures shown originally submitted to Federal Highway Administration in August, 2000
 Figures may not add up to totals due to numerical rounding

**2002 MARICOPA COUNTY ESTIMATES OF DAILY VEHICLE TRAVEL
BY HIGHWAY FUNCTIONAL CLASSIFICATION & NON-ATTAINMENT AREA**

FHWA HIGHWAY FUNCTIONAL SYSTEM

RURAL			URBAN		
Code	Description	Estimated DVMT (In Thousands)	Code	Description	Estimated DVMT (In Thousands)
1	Principal Arterial - Interstate	2,876	11	Principal Arterial - Interstate	9,927
2	Principal Arterial - Other	1,641	12	Freeways & Expressways	13,801
6	Minor Arterial	769	14	Principal Arterial - Other	17,518
7	Major Collector	2,236	16	Minor Arterial	10,452
8	Minor Collector	255	17	Collector	6,241
9	Local	511	19	Local	7,352
County Rural Total:		8,288	County Urban Total:		65,291

Total Estimated County DVMT: (In Thousands)
73,579

Units for defining length and travel in this report are miles and vehicle-miles (in thousands), respectively

Figures shown originally submitted to Federal Highway Administration in October, 2003

Figures may not add up to totals due to numerical rounding

Appendix 5.2

MOBILE6.2 Inputs, Outputs, and Spreadsheet

In order to calculate vehicle emission factors for the 2002 peak ozone season, two MOBILE6.2 runs were performed:

1. I/M program in place.
2. No I/M program in place.

A portion of the MOBILE6.2 input and output files are provided in this appendix as an example. Scenarios for each Area and Facility type combination were defined within each input file. The MOBILE6.2 emission factors produced by the two runs were subsequently weighted together in a spreadsheet program using the appropriate proportions as described in the Emission Factor Estimation Procedure section. The spreadsheet calculations are included after the MOBILE6.2 input and output files in this appendix.

In order to calculate annual average day emission factors for 2002, twenty four MOBILE6.2 runs were performed:

1. I/M program in place, and
2. No I/M program in place,

for all twelve months of the year for a total of 24 runs.

Scenarios for each Area and Facility type combination were defined within each input file. The MOBILE6.2 emission factors produced by the runs were subsequently weighted together using the FORTRAN program “NEIProgram” using the appropriate proportions as described in the Emission Factor Estimation Procedure section.

MOBILE6 INPUT FILE :

RUN DATA

NO REFUELING :
I/M PROGRAM : 1 1977 2050 1 T/O LOADED/IDLE
I/M MODEL YEARS : 1 1967 2007
I/M VEHICLES : 1 11111 22222222 2
I/M STRINGENCY : 1 28.0
I/M COMPLIANCE : 1 97.0
I/M WAIVER RATES : 1 1.3 1.0
I/M GRACE PERIOD : 1 5
I/M PROGRAM : 2 1977 2050 2 T/O IM240
I/M MODEL YEARS : 2 1981 1995
I/M VEHICLES : 2 22222 11111111 1
I/M STRINGENCY : 2 28.0
I/M COMPLIANCE : 2 97.0
I/M WAIVER RATES : 2 1.3 1.0
I/M GRACE PERIOD : 2 5
I/M CUTPOINTS : 2 CUTcmp02.d
I/M PROGRAM : 3 1977 2050 1 T/O LOADED/IDLE
I/M MODEL YEARS : 3 1967 1980
I/M VEHICLES : 3 22222 11111111 1
I/M STRINGENCY : 3 28.0
I/M COMPLIANCE : 3 97.0
I/M WAIVER RATES : 3 1.3 1.0
I/M PROGRAM : 4 2001 2050 2 T/O OBD I/M
I/M MODEL YEARS : 4 1996 2050
I/M VEHICLES : 4 22222 11111111 1
I/M STRINGENCY : 4 28.0
I/M COMPLIANCE : 4 97.0
I/M WAIVER RATES : 4 1.3 1.0
I/M GRACE PERIOD : 4 5
I/M PROGRAM : 5 2001 2050 2 T/O EVAP OBD & GC
I/M MODEL YEARS : 5 1996 2050
I/M VEHICLES : 5 22222 11111111 1
I/M STRINGENCY : 5 28.0
I/M COMPLIANCE : 5 97.0
I/M WAIVER RATES : 5 1.3 1.0
I/M GRACE PERIOD : 5 5

ANTI-TAMP PROG :
87 75 80 22222 22222222 2 11 097. 22111222
ANTI-TAMP PROG :
87 81 95 11111 22222222 2 11 097. 22111222

*the tech12.d file must be located with Mobile6 execution file
*the user tech file tech12.lme should be renamed as tech12.d
*Two more I/M programs should not have overlapped motor vehicles.

REG DIST : 02reg02.d
DIESEL FRACTIONS :
0.0050 0.0040 0.0060 0.0040 0.0040 0.0030 0.0030 0.0030 0.0030 0.0030
0.0040 0.0040 0.0030 0.0030 0.0040 0.0080 0.0090 0.0160 0.0210 0.0430
0.0580 0.0470 0.0480 0.0260 0.0170
0.0740 0.0660 0.0690 0.1030 0.0280 0.0600 0.0500 0.0390 0.0250 0.0400
0.0330 0.0280 0.0250 0.0170 0.0150 0.0220 0.0290 0.0330 0.0480 0.0550
0.0720 0.0350 0.0290 0.0170 0.0110
0.0740 0.0660 0.0690 0.1030 0.0280 0.0600 0.0500 0.0390 0.0250 0.0400
0.0330 0.0280 0.0250 0.0170 0.0150 0.0220 0.0290 0.0330 0.0480 0.0550
0.0720 0.0350 0.0290 0.0170 0.0110
0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0115 0.0111 0.0145
0.0115 0.0129 0.0096 0.0083 0.0072 0.0082 0.0124 0.0135 0.0169 0.0209
0.0256 0.0013 0.0006 0.0011 0.0001
0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0115 0.0111 0.0145
0.0115 0.0129 0.0096 0.0083 0.0072 0.0082 0.0124 0.0135 0.0169 0.0209
0.0256 0.0013 0.0006 0.0011 0.0001
0.1998 0.1998 0.1998 0.1998 0.1998 0.1998 0.1998 0.1998 0.2578 0.2515 0.3263
0.2784 0.2963 0.2384 0.2058 0.1756 0.1958 0.2726 0.2743 0.3004 0.2918
0.2859 0.0138 0.0000 0.0000 0.0000
0.6774 0.6774 0.6774 0.6774 0.6774 0.6774 0.6774 0.7715 0.7910 0.8105
0.8068 0.8280 0.8477 0.7940 0.7488 0.7789 0.7842 0.6145 0.5139 0.5032

0.4277 0.0079 0.0000 0.0000 0.0001
 0.8606 0.8606 0.8606 0.8606 0.8606 0.8606 0.8473 0.8048 0.8331
 0.7901 0.7316 0.7275 0.7158 0.5647 0.3178 0.2207 0.1968 0.1570 0.0738
 0.0341 0.0414 0.0003 0.0000 0.0000
 0.4647 0.4647 0.4647 0.4647 0.4647 0.4647 0.4647 0.4384 0.3670 0.4125
 0.3462 0.2771 0.2730 0.2616 0.1543 0.0615 0.0383 0.0333 0.0255 0.0111
 0.0049 0.0060 0.0000 0.0000 0.0000
 0.6300 0.6300 0.6300 0.6300 0.6300 0.6300 0.6300 0.6078 0.5246 0.5767
 0.5289 0.5788 0.5617 0.4537 0.4216 0.4734 0.4705 0.4525 0.4310 0.3569
 0.3690 0.4413 0.3094 0.1679 0.1390
 0.8563 0.8563 0.8563 0.8563 0.8563 0.8563 0.8563 0.8443 0.7943 0.8266
 0.7972 0.8279 0.8177 0.7440 0.7184 0.7588 0.7567 0.7431 0.7261 0.6602
 0.6717 0.7344 0.6107 0.4140 0.3610
 0.9992 0.9992 0.9992 0.9992 0.9992 0.9992 0.9992 0.9989 0.9987 0.9989
 0.9977 0.9984 0.9982 0.9979 0.9969 0.9978 0.9980 0.9979 0.9976 0.9969
 0.9978 0.9982 0.9974 0.9965 0.9964
 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
 1.0000 1.0000 1.0000 1.0000 1.0000
 0.9585 0.9585 0.9585 0.9585 0.9585 0.9585 0.9585 0.8857 0.8525 0.8795
 0.9900 0.9105 0.8760 0.7710 0.7502 0.7345 0.6733 0.5155 0.3845 0.3238
 0.3260 0.2639 0.0594 0.0460 0.0291

SCENARIO RECORD : AT1 Int/Free
 CALENDAR YEAR : 2002
 EVALUATION MONTH : 7
 ALTITUDE : 1
 ABSOLUTE HUMIDITY : 45.6
 MIN/MAX TEMPERATURE: 80.0 104.0
 AVERAGE SPEED : 59.7 freeway
 VMT BY FACILITY : allfwy.def
 FUEL RVP : 6.6
 FUEL PROGRAM : 4
 78.1 78.1 78.1 78.1 78.1 78.1 78.1 78.1
 78.1 78.1 78.1 78.1 78.1 78.1 78.1 78.1
 338.0 338.0 338.0 338.0 338.0 338.0 338.0 338.0
 338.0 338.0 338.0 338.0 338.0 338.0 338.0 338.0
 SULFUR CONTENT : 78.1
 OXYGENATED FUELS : 1.000 0.000 0.019 0.000 1

SCENARIO RECORD : AT2 Int/Free
 CALENDAR YEAR : 2002
 EVALUATION MONTH : 7
 ALTITUDE : 1
 ABSOLUTE HUMIDITY : 45.6
 MIN/MAX TEMPERATURE: 80.0 104.0
 AVERAGE SPEED : 60.3 freeway
 VMT BY FACILITY : allfwy.def
 FUEL RVP : 6.6
 FUEL PROGRAM : 4
 78.1 78.1 78.1 78.1 78.1 78.1 78.1 78.1
 78.1 78.1 78.1 78.1 78.1 78.1 78.1 78.1
 338.0 338.0 338.0 338.0 338.0 338.0 338.0 338.0
 338.0 338.0 338.0 338.0 338.0 338.0 338.0 338.0
 SULFUR CONTENT : 78.1
 OXYGENATED FUELS : 1.000 0.000 0.019 0.000 1

SCENARIO RECORD : AT3 Int/Free
 CALENDAR YEAR : 2002
 EVALUATION MONTH : 7
 ALTITUDE : 1
 ABSOLUTE HUMIDITY : 45.6
 MIN/MAX TEMPERATURE: 80.0 104.0
 AVERAGE SPEED : 63.2 freeway
 VMT BY FACILITY : allfwy.def
 FUEL RVP : 6.6
 FUEL PROGRAM : 4
 78.1 78.1 78.1 78.1 78.1 78.1 78.1 78.1

78.1 78.1 78.1 78.1 78.1 78.1 78.1 78.1
338.0 338.0 338.0 338.0 338.0 338.0 338.0 338.0
338.0 338.0 338.0 338.0 338.0 338.0 338.0 338.0
SULFUR CONTENT : 78.1
OXYGENATED FUELS : 1.000 0.000 0.019 0.000 1

SCENARIO RECORD : AT4 Int/Free
CALENDAR YEAR : 2002
EVALUATION MONTH : 7
ALTITUDE : 1
ABSOLUTE HUMIDITY : 45.6
MIN/MAX TEMPERATURE: 80.0 104.0

* MOBILE6.2.03 (24-Sep-2003) *

* Input file: IMOZ02H.IN (file 1, run 1). *

M603 Comment:

User has disabled the calculation of REFUELING emissions.

* Reading non-default I/M CUTPOINTS from the following external

* data file: CUTCMP02.D

* Reading Registration Distributions from the following external

* data file: 02REG02.D

M 49 Warning:

1.00 MYR sum not = 1. (will normalize)

M 49 Warning:

0.999 MYR sum not = 1. (will normalize)

M 49 Warning:

0.999 MYR sum not = 1. (will normalize)

M 49 Warning:

0.999 MYR sum not = 1. (will normalize)

M 49 Warning:

0.999 MYR sum not = 1. (will normalize)

M 49 Warning:

1.00 MYR sum not = 1. (will normalize)

M614 Comment:

User supplied diesel sale fractions.

* #####

* AT1 Int/Free

* File 1, Run 1, Scenario 1.

* #####

M582 Warning:

The user supplied freeway average speed of 59.7
will be used for all hours of the day. 100% of VMT
has been assigned to a fixed combination of freeways
and freeway ramps for all hours of the day and all
vehicle types.

* Reading Hourly Roadway VMT distribution from the following external

* data file: ALLFWY.DEF

Reading User Supplied ROADWAY VMT Factors

M616 Comment:

User has supplied post-1999 sulfur levels.

User supplied gasoline sulfur content = 78.1 ppm.

*** I/M credits for Tech1&2 vehicles were read from the following external

data file: TECH12.D

M 48 Warning:

there are no sales for vehicle class HDGV8b

Calendar Year: 2002

Month: July

Altitude: Low

Minimum Temperature: 80.0 (F)

Maximum Temperature: 104.0 (F)

Absolute Humidity: 46. grains/lb
Nominal Fuel RVP: 6.6 psi
Weathered RVP: 6.0 psi
Fuel Sulfur Content: 78. ppm

Exhaust I/M Program: Yes
Evap I/M Program: Yes
ATP Program: Yes
Reformulated Gas: No

Ether Blend Market Share: 1.000 Alcohol Blend Market Share: 0.000
Ether Blend Oxygen Content: 0.019 Alcohol Blend Oxygen Content: 0.000
Alcohol Blend RVP Waiver: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:	<6000	>6000	(All)							
VTM Distribution:	0.4509	0.2822	0.1116	0.0356	0.0022	0.0216	0.0909	0.0051	1.0000	
Composite Emission Factors (g/mi):										
Composite VOC :	0.962	1.122	1.363	1.190	0.916	0.393	0.267	0.396	2.71	0.992
Composite CO :	14.51	17.86	20.26	18.54	15.24	1.236	0.667	2.493	27.06	14.765
Composite NOX :	1.064	1.331	1.627	1.415	5.606	1.789	1.191	23.579	1.63	3.417

* #####
* AT2 Int/Free
* File 1, Run 1, Scenario 2.
* #####
M582 Warning:

The user supplied freeway average speed of 60.3
will be used for all hours of the day. 100% of VMT
has been assigned to a fixed combination of freeways
and freeway ramps for all hours of the day and all
vehicle types.

* Reading Hourly Roadway VMT distribution from the following external
* data file: ALLFWY.DEF

Reading User Supplied ROADWAY VMT Factors
M616 Comment:
User has supplied post-1999 sulfur levels.

User supplied gasoline sulfur content = 78.1 ppm.
M 48 Warning:
there are no sales for vehicle class HDGV8b

Calendar Year: 2002
Month: July
Altitude: Low
Minimum Temperature: 80.0 (F)
Maximum Temperature: 104.0 (F)
Absolute Humidity: 46. grains/lb
Nominal Fuel RVP: 6.6 psi
Weathered RVP: 6.0 psi
Fuel Sulfur Content: 78. ppm

Exhaust I/M Program: Yes

Evap I/M Program: Yes
 ATP Program: Yes
 Reformulated Gas: No

Ether Blend Market Share: 1.000 Alcohol Blend Market Share: 0.000
 Ether Blend Oxygen Content: 0.019 Alcohol Blend Oxygen Content: 0.000
 Alcohol Blend RVP Waiver: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:	<6000	>6000	(All)							
VTM Distribution:	0.4509	0.2822	0.1116	0.0356	0.0022	0.0216	0.0909	0.0051	1.0000	

Composite Emission Factors (g/mi):										
Composite VOC :	0.961	1.119	1.360	1.188	0.915	0.393	0.267	0.396	2.75	0.990
Composite CO :	14.60	17.95	20.36	18.63	15.61	1.247	0.674	2.533	28.26	14.866
Composite NOX :	1.066	1.333	1.630	1.417	5.630	1.834	1.221	24.050	1.65	3.464

* #####
 * AT3 Int/Free
 * File 1, Run 1, Scenario 3.
 * #####

M515 Warning:
 The combined freeway and ramp average speed entered
 cannot be greater than 60.7 miles per hour.
 The average speed will be reset to this value.

M582 Warning:
 The user supplied freeway average speed of 60.7
 will be used for all hours of the day. 100% of VMT
 has been assigned to a fixed combination of freeways
 and freeway ramps for all hours of the day and all
 vehicle types.

* Reading Hourly Roadway VMT distribution from the following external
 * data file: ALLFWY.DEF

Reading User Supplied ROADWAY VMT Factors

M616 Comment:

User has supplied post-1999 sulfur levels.

User supplied gasoline sulfur content = 78.1 ppm.

M 48 Warning:

there are no sales for vehicle class HDGV8b

Calendar Year: 2002

Month: July

Altitude: Low

Minimum Temperature: 80.0 (F)

Maximum Temperature: 104.0 (F)

Absolute Humidity: 46. grains/lb

Nominal Fuel RVP: 6.6 psi

Weathered RVP: 6.0 psi

Fuel Sulfur Content: 78. ppm

Exhaust I/M Program: Yes

Evap I/M Program: Yes

ATP Program: Yes

Reformulated Gas: No

Ether Blend Market Share: 1.000 Alcohol Blend Market Share: 0.000

Ether Blend Oxygen Content: 0.019 Alcohol Blend Oxygen Content: 0.000

Alcohol Blend RVP Waiver: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:	<6000	>6000	(All)							

VMT Distribution:	0.4509	0.2822	0.1116		0.0356	0.0022	0.0216	0.0909	0.0051	1.0000
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Composite Emission Factors (g/mi):

Composite VOC :	0.960	1.118	1.358	1.186	0.915	0.393	0.267	0.396	2.78	0.989
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Composite CO :	14.66	18.01	20.42	18.70	15.86	1.254	0.678	2.559	29.05	14.931
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Composite NOX :	1.067	1.335	1.632	1.419	5.645	1.864	1.241	24.357	1.66	3.494
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* # # # # #

* AT4 Int/Free

* File 1, Run 1, Scenario 4.

* # # # # #

M515 Warning:

The combined freeway and ramp average speed entered cannot be greater than 60.7 miles per hour.

The average speed will be reset to this value.

M582 Warning:

The user supplied freeway average speed of 60.7 will be used for all hours of the day. 100% of VMT has been assigned to a fixed combination of freeways

Facility Type - Interstate / Freeway / Expressway					Pollutant - VOC		Net Emission Factor (grams/mile)
Vehicle Class	Area Type	Speed	I/M		No I/M		
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	59.7	0.962	0.882	1.135	0.094	0.976
	2	60.3	0.961	0.881	1.133	0.094	0.975
	3	63.2	0.960	0.880	1.132	0.094	0.974
	4	64.8	0.960	0.880	1.132	0.094	0.974
	5	64.2	0.960	0.880	1.132	0.094	0.974
LDGT1 Light Duty Gasoline Trucks 1	1	59.7	1.122	1.029	1.364	0.113	1.142
	2	60.3	1.119	1.026	1.360	0.113	1.139
	3	63.2	1.118	1.025	1.358	0.113	1.138
	4	64.8	1.118	1.025	1.358	0.113	1.138
	5	64.2	1.118	1.025	1.358	0.113	1.138
LDGT2 Light Duty Gasoline Trucks 2	1	59.7	1.363	1.250	1.551	0.129	1.379
	2	60.3	1.360	1.247	1.547	0.128	1.376
	3	63.2	1.358	1.245	1.544	0.128	1.373
	4	64.8	1.358	1.245	1.544	0.128	1.373
	5	64.2	1.358	1.245	1.544	0.128	1.373
HDGV Heavy Duty Gasoline Vehicles	1	59.7	0.916	0.840	0.962	0.080	0.920
	2	60.3	0.915	0.839	0.962	0.080	0.919
	3	63.2	0.915	0.839	0.961	0.080	0.919
	4	64.8	0.915	0.839	0.961	0.080	0.919
	5	64.2	0.915	0.839	0.961	0.080	0.919
LDDV Light Duty Diesel Vehicles	1	59.7	0.393	0.360	0.393	0.033	0.393
	2	60.3	0.393	0.360	0.393	0.033	0.393
	3	63.2	0.393	0.360	0.393	0.033	0.393
	4	64.8	0.393	0.360	0.393	0.033	0.393
	5	64.2	0.393	0.360	0.393	0.033	0.393
LDDT Light Duty Diesel Trucks	1	59.7	0.267	0.245	0.267	0.022	0.267
	2	60.3	0.267	0.245	0.267	0.022	0.267
	3	63.2	0.267	0.245	0.267	0.022	0.267
	4	64.8	0.267	0.245	0.267	0.022	0.267
	5	64.2	0.267	0.245	0.267	0.022	0.267
HDDV Heavy Duty Diesel Vehicles	1	59.7	0.396	0.363	0.396	0.033	0.396
	2	60.3	0.396	0.363	0.396	0.033	0.396
	3	63.2	0.396	0.363	0.396	0.033	0.396
	4	64.8	0.396	0.363	0.396	0.033	0.396
	5	64.2	0.396	0.363	0.396	0.033	0.396
MC Motorcycles	1	59.7	2.710	2.485	2.710	0.225	2.710
	2	60.3	2.750	2.522	2.750	0.228	2.750
	3	63.2	2.780	2.549	2.780	0.231	2.780
	4	64.8	2.780	2.549	2.780	0.231	2.780
	5	64.2	2.780	2.549	2.780	0.231	2.780

Facility Type - Principal Arterials / Minor Arterials					Pollutant - VOC		Net Emission Factor (grams/mile)
Vehicle Class	Area Type	Speed	I/M		No I/M		
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	30.3	1.092	1.001	1.315	0.109	1.111
	2	34.4	1.053	0.966	1.264	0.105	1.071
	3	36.1	1.042	0.956	1.250	0.104	1.059
	4	39.0	1.028	0.943	1.231	0.102	1.045
	5	42.6	1.012	0.928	1.210	0.100	1.028
LDGT1 Light Duty Gasoline Trucks 1	1	30.3	1.300	1.192	1.599	0.133	1.325
	2	34.4	1.251	1.147	1.535	0.127	1.275
	3	36.1	1.236	1.133	1.516	0.126	1.259
	4	39.0	1.216	1.115	1.492	0.124	1.239
	5	42.6	1.194	1.095	1.463	0.121	1.216
LDGT2 Light Duty Gasoline Trucks 2	1	30.3	1.595	1.463	1.837	0.152	1.615
	2	34.4	1.532	1.405	1.759	0.146	1.551
	3	36.1	1.514	1.388	1.737	0.144	1.533
	4	39.0	1.490	1.366	1.708	0.142	1.508
	5	42.6	1.461	1.340	1.675	0.139	1.479
HDGV Heavy Duty Gasoline Vehicles	1	30.3	1.311	1.202	1.394	0.116	1.318
	2	34.4	1.193	1.094	1.262	0.105	1.199
	3	36.1	1.153	1.057	1.218	0.101	1.158
	4	39.0	1.095	1.004	1.154	0.096	1.100
	5	42.6	1.038	0.952	1.091	0.091	1.042
LDDV Light Duty Diesel Vehicles	1	30.3	0.499	0.458	0.499	0.041	0.499
	2	34.4	0.468	0.429	0.468	0.039	0.468
	3	36.1	0.457	0.419	0.457	0.038	0.457
	4	39.0	0.440	0.403	0.440	0.037	0.440
	5	42.6	0.424	0.389	0.424	0.035	0.424
LDDT Light Duty Diesel Trucks	1	30.3	0.356	0.326	0.356	0.030	0.356
	2	34.4	0.330	0.303	0.330	0.027	0.330
	3	36.1	0.320	0.293	0.320	0.027	0.320
	4	39.0	0.307	0.282	0.307	0.025	0.307
	5	42.6	0.293	0.269	0.293	0.024	0.293
HDDV Heavy Duty Diesel Vehicles	1	30.3	0.603	0.553	0.603	0.050	0.603
	2	34.4	0.541	0.496	0.541	0.045	0.541
	3	36.1	0.520	0.477	0.520	0.043	0.520
	4	39.0	0.488	0.447	0.488	0.041	0.488
	5	42.6	0.456	0.418	0.456	0.038	0.456
MC Motorcycles	1	30.3	2.450	2.247	2.450	0.203	2.450
	2	34.4	2.330	2.137	2.330	0.193	2.330
	3	36.1	2.290	2.100	2.290	0.190	2.290
	4	39.0	2.240	2.054	2.240	0.186	2.240
	5	42.6	2.190	2.008	2.190	0.182	2.190

Facility Type - Collectors					Pollutant - VOC		Net Emission Factor (grams/mile)
Vehicle Class	Area Type	Speed	I/M		No I/M		
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	18.2	1.300	1.192	1.568	0.130	1.322
	2	19.1	1.276	1.170	1.540	0.128	1.298
	3	24.4	1.167	1.070	1.406	0.117	1.187
	4	24.7	1.162	1.066	1.400	0.116	1.182
	5	28.2	1.115	1.022	1.344	0.112	1.134
LDGT1 Light Duty Gasoline Trucks 1	1	18.2	1.553	1.424	1.908	0.158	1.582
	2	19.1	1.520	1.394	1.867	0.155	1.549
	3	24.4	1.387	1.272	1.705	0.142	1.413
	4	24.7	1.381	1.266	1.698	0.141	1.407
	5	28.2	1.327	1.217	1.632	0.135	1.352
LDGT2 Light Duty Gasoline Trucks 2	1	18.2	1.906	1.748	2.204	0.183	1.931
	2	19.1	1.865	1.710	2.157	0.179	1.889
	3	24.4	1.702	1.561	1.963	0.163	1.724
	4	24.7	1.695	1.554	1.955	0.162	1.717
	5	28.2	1.629	1.494	1.877	0.156	1.650
HDGV Heavy Duty Gasoline Vehicles	1	18.2	1.994	1.828	2.157	0.179	2.008
	2	19.1	1.918	1.759	2.072	0.172	1.931
	3	24.4	1.562	1.432	1.674	0.139	1.571
	4	24.7	1.547	1.419	1.657	0.138	1.556
	5	28.2	1.388	1.273	1.480	0.123	1.396
LDDV Light Duty Diesel Vehicles	1	18.2	0.652	0.598	0.652	0.054	0.652
	2	19.1	0.637	0.584	0.637	0.053	0.637
	3	24.4	0.561	0.514	0.561	0.047	0.561
	4	24.7	0.557	0.511	0.557	0.046	0.557
	5	28.2	0.519	0.476	0.519	0.043	0.519
LDDT Light Duty Diesel Trucks	1	18.2	0.484	0.444	0.484	0.040	0.484
	2	19.1	0.472	0.433	0.472	0.039	0.472
	3	24.4	0.408	0.374	0.408	0.034	0.408
	4	24.7	0.405	0.371	0.405	0.034	0.405
	5	28.2	0.372	0.341	0.372	0.031	0.372
HDDV Heavy Duty Diesel Vehicles	1	18.2	0.901	0.826	0.901	0.075	0.901
	2	19.1	0.872	0.800	0.872	0.072	0.872
	3	24.4	0.723	0.663	0.723	0.060	0.723
	4	24.7	0.716	0.657	0.716	0.059	0.716
	5	28.2	0.641	0.588	0.641	0.053	0.641
MC Motorcycles	1	18.2	3.000	2.751	3.000	0.249	3.000
	2	19.1	2.940	2.696	2.940	0.244	2.940
	3	24.4	2.660	2.439	2.660	0.221	2.660
	4	24.7	2.650	2.430	2.650	0.220	2.650
	5	28.2	2.510	2.302	2.510	0.208	2.510

Facility Type - Local			Pollutant - VOC				
Vehicle Class	Area Type	Speed	I/M		No I/M		Net Emission Factor (grams/mile)
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	12.9	1.504	1.379	1.821	0.151	1.530
	2	12.9	1.504	1.379	1.821	0.151	1.530
	3	12.9	1.504	1.379	1.821	0.151	1.530
	4	12.9	1.504	1.379	1.821	0.151	1.530
	5	12.9	1.504	1.379	1.821	0.151	1.530
LDGT1 Light Duty Gasoline Trucks 1	1	12.9	1.835	1.683	2.248	0.187	1.869
	2	12.9	1.835	1.683	2.248	0.187	1.869
	3	12.9	1.835	1.683	2.248	0.187	1.869
	4	12.9	1.835	1.683	2.248	0.187	1.869
	5	12.9	1.835	1.683	2.248	0.187	1.869
LDGT2 Light Duty Gasoline Trucks 2	1	12.9	2.248	2.061	2.605	0.216	2.278
	2	12.9	2.248	2.061	2.605	0.216	2.278
	3	12.9	2.248	2.061	2.605	0.216	2.278
	4	12.9	2.248	2.061	2.605	0.216	2.278
	5	12.9	2.248	2.061	2.605	0.216	2.278
HDGV Heavy Duty Gasoline Vehicles	1	12.9	2.610	2.393	2.846	0.236	2.630
	2	12.9	2.610	2.393	2.846	0.236	2.630
	3	12.9	2.610	2.393	2.846	0.236	2.630
	4	12.9	2.610	2.393	2.846	0.236	2.630
	5	12.9	2.610	2.393	2.846	0.236	2.630
LDDV Light Duty Diesel Vehicles	1	12.9	0.760	0.697	0.760	0.063	0.760
	2	12.9	0.760	0.697	0.760	0.063	0.760
	3	12.9	0.760	0.697	0.760	0.063	0.760
	4	12.9	0.760	0.697	0.760	0.063	0.760
	5	12.9	0.760	0.697	0.760	0.063	0.760
LDDT Light Duty Diesel Trucks	1	12.9	0.576	0.528	0.576	0.048	0.576
	2	12.9	0.576	0.528	0.576	0.048	0.576
	3	12.9	0.576	0.528	0.576	0.048	0.576
	4	12.9	0.576	0.528	0.576	0.048	0.576
	5	12.9	0.576	0.528	0.576	0.048	0.576
HDDV Heavy Duty Diesel Vehicles	1	12.9	1.114	1.022	1.114	0.092	1.114
	2	12.9	1.114	1.022	1.114	0.092	1.114
	3	12.9	1.114	1.022	1.114	0.092	1.114
	4	12.9	1.114	1.022	1.114	0.092	1.114
	5	12.9	1.114	1.022	1.114	0.092	1.114
MC Motorcycles	1	12.9	3.550	3.255	3.550	0.295	3.550
	2	12.9	3.550	3.255	3.550	0.295	3.550
	3	12.9	3.550	3.255	3.550	0.295	3.550
	4	12.9	3.550	3.255	3.550	0.295	3.550
	5	12.9	3.550	3.255	3.550	0.295	3.550

Facility Type - Interstate / Freeway / Expressway					Pollutant - NOx		Net Emission Factor (grams/mile)
Vehicle Class	Area Type	Speed	I/M		No I/M		
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	59.7	1.064	0.976	1.184	0.098	1.074
	2	60.3	1.066	0.978	1.186	0.098	1.076
	3	63.2	1.067	0.978	1.187	0.099	1.077
	4	64.8	1.067	0.978	1.187	0.099	1.077
	5	64.2	1.067	0.978	1.187	0.099	1.077
LDGT1 Light Duty Gasoline Trucks 1	1	59.7	1.331	1.221	1.458	0.121	1.342
	2	60.3	1.333	1.222	1.461	0.121	1.344
	3	63.2	1.335	1.224	1.462	0.121	1.346
	4	64.8	1.335	1.224	1.462	0.121	1.346
	5	64.2	1.335	1.224	1.462	0.121	1.346
LDGT2 Light Duty Gasoline Trucks 2	1	59.7	1.627	1.492	1.743	0.145	1.637
	2	60.3	1.630	1.495	1.745	0.145	1.640
	3	63.2	1.632	1.497	1.747	0.145	1.642
	4	64.8	1.632	1.497	1.747	0.145	1.642
	5	64.2	1.632	1.497	1.747	0.145	1.642
HDGV Heavy Duty Gasoline Vehicles	1	59.7	5.606	5.141	5.672	0.471	5.611
	2	60.3	5.630	5.163	5.695	0.473	5.635
	3	63.2	5.645	5.176	5.711	0.474	5.650
	4	64.8	5.645	5.176	5.711	0.474	5.650
	5	64.2	5.645	5.176	5.711	0.474	5.650
LDDV Light Duty Diesel Vehicles	1	59.7	1.789	1.641	1.789	0.148	1.789
	2	60.3	1.834	1.682	1.834	0.152	1.834
	3	63.2	1.864	1.709	1.864	0.155	1.864
	4	64.8	1.864	1.709	1.864	0.155	1.864
	5	64.2	1.864	1.709	1.864	0.155	1.864
LDDT Light Duty Diesel Trucks	1	59.7	1.191	1.092	1.191	0.099	1.191
	2	60.3	1.221	1.120	1.221	0.101	1.221
	3	63.2	1.241	1.138	1.241	0.103	1.241
	4	64.8	1.241	1.138	1.241	0.103	1.241
	5	64.2	1.241	1.138	1.241	0.103	1.241
HDDV Heavy Duty Diesel Vehicles	1	59.7	23.579	21.622	23.579	1.957	23.579
	2	60.3	24.050	22.054	24.050	1.996	24.050
	3	63.2	24.357	22.335	24.357	2.022	24.357
	4	64.8	24.357	22.335	24.357	2.022	24.357
	5	64.2	24.357	22.335	24.357	2.022	24.357
MC Motorcycles	1	59.7	1.630	1.495	1.630	0.135	1.630
	2	60.3	1.650	1.513	1.650	0.137	1.650
	3	63.2	1.660	1.522	1.660	0.138	1.660
	4	64.8	1.660	1.522	1.660	0.138	1.660
	5	64.2	1.660	1.522	1.660	0.138	1.660

Facility Type - Principal Arterials / Minor Arterials					Pollutant - NOx		Net Emission Factor (grams/mile)
Vehicle Class	Area Type	Speed	I/M		No I/M		
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	30.3	1.027	0.942	1.155	0.096	1.038
	2	34.4	0.999	0.916	1.125	0.093	1.009
	3	36.1	0.997	0.914	1.121	0.093	1.007
	4	39.0	0.999	0.916	1.123	0.093	1.009
	5	42.6	1.005	0.922	1.128	0.094	1.015
LDGT1 Light Duty Gasoline Trucks 1	1	30.3	1.236	1.133	1.362	0.113	1.246
	2	34.4	1.217	1.116	1.342	0.111	1.227
	3	36.1	1.217	1.116	1.342	0.111	1.227
	4	39.0	1.224	1.122	1.348	0.112	1.234
	5	42.6	1.236	1.133	1.360	0.113	1.246
LDGT2 Light Duty Gasoline Trucks 2	1	30.3	1.534	1.407	1.649	0.137	1.544
	2	34.4	1.513	1.387	1.626	0.135	1.522
	3	36.1	1.513	1.387	1.625	0.135	1.522
	4	39.0	1.518	1.392	1.631	0.135	1.527
	5	42.6	1.529	1.402	1.642	0.136	1.538
HDGV Heavy Duty Gasoline Vehicles	1	30.3	4.481	4.109	4.533	0.376	4.485
	2	34.4	4.630	4.246	4.684	0.389	4.634
	3	36.1	4.693	4.303	4.748	0.394	4.698
	4	39.0	4.798	4.400	4.854	0.403	4.803
	5	42.6	4.929	4.520	4.987	0.414	4.934
LDDV Light Duty Diesel Vehicles	1	30.3	1.006	0.923	1.006	0.083	1.006
	2	34.4	0.998	0.915	0.998	0.083	0.998
	3	36.1	1.003	0.920	1.003	0.083	1.003
	4	39.0	1.018	0.934	1.018	0.084	1.018
	5	42.6	1.057	0.969	1.057	0.088	1.057
LDDT Light Duty Diesel Trucks	1	30.3	0.664	0.609	0.664	0.055	0.664
	2	34.4	0.659	0.604	0.659	0.055	0.659
	3	36.1	0.663	0.608	0.663	0.055	0.663
	4	39.0	0.672	0.616	0.672	0.056	0.672
	5	42.6	0.698	0.640	0.698	0.058	0.698
HDDV Heavy Duty Diesel Vehicles	1	30.3	12.407	11.377	12.407	1.030	12.407
	2	34.4	12.331	11.308	12.331	1.023	12.331
	3	36.1	12.386	11.358	12.386	1.028	12.386
	4	39.0	12.537	11.496	12.537	1.041	12.537
	5	42.6	12.937	11.863	12.937	1.074	12.937
MC Motorcycles	1	30.3	1.140	1.045	1.140	0.095	1.140
	2	34.4	1.170	1.073	1.170	0.097	1.170
	3	36.1	1.190	1.091	1.190	0.099	1.190
	4	39.0	1.200	1.100	1.200	0.100	1.200
	5	42.6	1.220	1.119	1.220	0.101	1.220

Facility Type - Collectors					Pollutant - NOx		Net Emission Factor (grams/mile)
Vehicle Class	Area Type	Speed	I/M		No I/M		
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	18.2	1.211	1.110	1.355	0.112	1.223
	2	19.1	1.190	1.091	1.332	0.111	1.202
	3	24.4	1.096	1.005	1.230	0.102	1.107
	4	24.7	1.092	1.001	1.225	0.102	1.103
	5	28.2	1.048	0.961	1.178	0.098	1.059
LDGT1 Light Duty Gasoline Trucks 1	1	18.2	1.399	1.283	1.540	0.128	1.411
	2	19.1	1.380	1.265	1.519	0.126	1.392
	3	24.4	1.296	1.188	1.427	0.118	1.307
	4	24.7	1.292	1.185	1.423	0.118	1.303
	5	28.2	1.254	1.150	1.382	0.115	1.265
LDGT2 Light Duty Gasoline Trucks 2	1	18.2	1.733	1.589	1.860	0.154	1.744
	2	19.1	1.710	1.568	1.836	0.152	1.720
	3	24.4	1.607	1.474	1.727	0.143	1.617
	4	24.7	1.602	1.469	1.722	0.143	1.612
	5	28.2	1.556	1.427	1.672	0.139	1.566
HDGV Heavy Duty Gasoline Vehicles	1	18.2	4.054	3.718	4.101	0.340	4.058
	2	19.1	4.082	3.743	4.129	0.343	4.086
	3	24.4	4.270	3.916	4.320	0.359	4.274
	4	24.7	4.279	3.924	4.329	0.359	4.283
	5	28.2	4.411	4.045	4.462	0.370	4.415
LDDV Light Duty Diesel Vehicles	1	18.2	1.173	1.076	1.173	0.097	1.173
	2	19.1	1.152	1.056	1.152	0.096	1.152
	3	24.4	1.058	0.970	1.058	0.088	1.058
	4	24.7	1.054	0.967	1.054	0.087	1.054
	5	28.2	1.020	0.935	1.020	0.085	1.020
LDDT Light Duty Diesel Trucks	1	18.2	0.777	0.713	0.777	0.064	0.777
	2	19.1	0.763	0.700	0.763	0.063	0.763
	3	24.4	0.699	0.641	0.699	0.058	0.699
	4	24.7	0.697	0.639	0.697	0.058	0.697
	5	28.2	0.674	0.618	0.674	0.056	0.674
HDDV Heavy Duty Diesel Vehicles	1	18.2	14.146	12.972	14.146	1.174	14.146
	2	19.1	13.932	12.776	13.932	1.156	13.932
	3	24.4	12.953	11.878	12.953	1.075	12.953
	4	24.7	12.910	11.838	12.910	1.072	12.910
	5	28.2	12.558	11.516	12.558	1.042	12.558
MC Motorcycles	1	18.2	1.000	0.917	1.000	0.083	1.000
	2	19.1	1.010	0.926	1.010	0.084	1.010
	3	24.4	1.070	0.981	1.070	0.089	1.070
	4	24.7	1.080	0.990	1.080	0.090	1.080
	5	28.2	1.120	1.027	1.120	0.093	1.120

Vehicle Class	Area Type	Facility Type - Local			Pollutant - NOx		Net Emission Factor (grams/mile)
		Speed	I/M		No I/M		
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	12.9	1.389	1.274	1.547	0.128	1.402
	2	12.9	1.389	1.274	1.547	0.128	1.402
	3	12.9	1.389	1.274	1.547	0.128	1.402
	4	12.9	1.389	1.274	1.547	0.128	1.402
	5	12.9	1.389	1.274	1.547	0.128	1.402
LDGT1 Light Duty Gasoline Trucks 1	1	12.9	1.563	1.433	1.718	0.143	1.576
	2	12.9	1.563	1.433	1.718	0.143	1.576
	3	12.9	1.563	1.433	1.718	0.143	1.576
	4	12.9	1.563	1.433	1.718	0.143	1.576
	5	12.9	1.563	1.433	1.718	0.143	1.576
LDGT2 Light Duty Gasoline Trucks 2	1	12.9	1.930	1.770	2.071	0.172	1.942
	2	12.9	1.930	1.770	2.071	0.172	1.942
	3	12.9	1.930	1.770	2.071	0.172	1.942
	4	12.9	1.930	1.770	2.071	0.172	1.942
	5	12.9	1.930	1.770	2.071	0.172	1.942
HDGV Heavy Duty Gasoline Vehicles	1	12.9	3.868	3.547	3.913	0.325	3.872
	2	12.9	3.868	3.547	3.913	0.325	3.872
	3	12.9	3.868	3.547	3.913	0.325	3.872
	4	12.9	3.868	3.547	3.913	0.325	3.872
	5	12.9	3.868	3.547	3.913	0.325	3.872
LDDV Light Duty Diesel Vehicles	1	12.9	1.331	1.221	1.331	0.110	1.331
	2	12.9	1.331	1.221	1.331	0.110	1.331
	3	12.9	1.331	1.221	1.331	0.110	1.331
	4	12.9	1.331	1.221	1.331	0.110	1.331
	5	12.9	1.331	1.221	1.331	0.110	1.331
LDDT Light Duty Diesel Trucks	1	12.9	0.883	0.810	0.883	0.073	0.883
	2	12.9	0.883	0.810	0.883	0.073	0.883
	3	12.9	0.883	0.810	0.883	0.073	0.883
	4	12.9	0.883	0.810	0.883	0.073	0.883
	5	12.9	0.883	0.810	0.883	0.073	0.883
HDDV Heavy Duty Diesel Vehicles	1	12.9	15.790	14.479	15.790	1.311	15.790
	2	12.9	15.790	14.479	15.790	1.311	15.790
	3	12.9	15.790	14.479	15.790	1.311	15.790
	4	12.9	15.790	14.479	15.790	1.311	15.790
	5	12.9	15.790	14.479	15.790	1.311	15.790
MC Motorcycles	1	12.9	0.960	0.880	0.960	0.080	0.960
	2	12.9	0.960	0.880	0.960	0.080	0.960
	3	12.9	0.960	0.880	0.960	0.080	0.960
	4	12.9	0.960	0.880	0.960	0.080	0.960
	5	12.9	0.960	0.880	0.960	0.080	0.960

Facility Type - Interstate / Freeway / Expressway					Pollutant - CO		Net Emission Factor (grams/mile)
Vehicle Class	Area Type	Speed	I/M		No I/M		
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	59.7	14.510	13.306	18.210	1.511	14.817
	2	60.3	14.600	13.388	18.300	1.519	14.907
	3	63.2	14.660	13.443	18.370	1.525	14.968
	4	64.8	14.660	13.443	18.370	1.525	14.968
	5	64.2	14.660	13.443	18.370	1.525	14.968
LDGT1 Light Duty Gasoline Trucks 1	1	59.7	17.860	16.378	22.440	1.863	18.240
	2	60.3	17.950	16.460	22.540	1.871	18.331
	3	63.2	18.010	16.515	22.610	1.877	18.392
	4	64.8	18.010	16.515	22.610	1.877	18.392
	5	64.2	18.010	16.515	22.610	1.877	18.392
LDGT2 Light Duty Gasoline Trucks 2	1	59.7	20.260	18.578	26.750	2.220	20.799
	2	60.3	20.360	18.670	26.850	2.229	20.899
	3	63.2	20.420	18.725	26.920	2.234	20.960
	4	64.8	20.420	18.725	26.920	2.234	20.960
	5	64.2	20.420	18.725	26.920	2.234	20.960
HDGV Heavy Duty Gasoline Vehicles	1	59.7	15.240	13.975	17.520	1.454	15.429
	2	60.3	15.610	14.314	17.950	1.490	15.804
	3	63.2	15.860	14.544	18.240	1.514	16.058
	4	64.8	15.860	14.544	18.240	1.514	16.058
	5	64.2	15.860	14.544	18.240	1.514	16.058
LDDV Light Duty Diesel Vehicles	1	59.7	1.236	1.133	1.236	0.103	1.236
	2	60.3	1.247	1.143	1.247	0.104	1.247
	3	63.2	1.254	1.150	1.254	0.104	1.254
	4	64.8	1.254	1.150	1.254	0.104	1.254
	5	64.2	1.254	1.150	1.254	0.104	1.254
LDDT Light Duty Diesel Trucks	1	59.7	0.667	0.612	0.667	0.055	0.667
	2	60.3	0.674	0.618	0.674	0.056	0.674
	3	63.2	0.678	0.622	0.678	0.056	0.678
	4	64.8	0.678	0.622	0.678	0.056	0.678
	5	64.2	0.678	0.622	0.678	0.056	0.678
HDDV Heavy Duty Diesel Vehicles	1	59.7	2.493	2.286	2.493	0.207	2.493
	2	60.3	2.533	2.323	2.533	0.210	2.533
	3	63.2	2.559	2.347	2.559	0.212	2.559
	4	64.8	2.559	2.347	2.559	0.212	2.559
	5	64.2	2.559	2.347	2.559	0.212	2.559
MC Motorcycles	1	59.7	27.060	24.814	27.060	2.246	27.060
	2	60.3	28.260	25.914	28.260	2.346	28.260
	3	63.2	29.050	26.639	29.050	2.411	29.050
	4	64.8	29.050	26.639	29.050	2.411	29.050
	5	64.2	29.050	26.639	29.050	2.411	29.050

Facility Type - Principal Arterials / Minor Arterials					Pollutant - CO		Net Emission Factor (grams/mile)
Vehicle Class	Area Type	Speed	I/M		No I/M		
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	30.3	10.000	9.170	13.310	1.105	10.275
	2	34.4	10.220	9.372	13.500	1.121	10.492
	3	36.1	10.410	9.546	13.700	1.137	10.683
	4	39.0	10.790	9.894	14.130	1.173	11.067
	5	42.6	11.280	10.344	14.670	1.218	11.561
LDGT1 Light Duty Gasoline Trucks 1	1	30.3	13.150	12.059	17.470	1.450	13.509
	2	34.4	13.450	12.334	17.730	1.472	13.805
	3	36.1	13.670	12.535	17.950	1.490	14.025
	4	39.0	14.090	12.921	18.400	1.527	14.448
	5	42.6	14.620	13.407	18.970	1.575	14.981
LDGT2 Light Duty Gasoline Trucks 2	1	30.3	15.460	14.177	21.780	1.808	15.985
	2	34.4	15.740	14.434	21.980	1.824	16.258
	3	36.1	15.960	14.635	22.200	1.843	16.478
	4	39.0	16.400	15.039	22.650	1.880	16.919
	5	42.6	16.940	15.534	23.230	1.928	17.462
HDGV Heavy Duty Gasoline Vehicles	1	30.3	12.830	11.765	14.750	1.224	12.989
	2	34.4	11.510	10.555	13.230	1.098	11.653
	3	36.1	11.130	10.206	12.800	1.062	11.269
	4	39.0	10.640	9.757	12.240	1.016	10.773
	5	42.6	10.360	9.500	11.920	0.989	10.489
LDDV Light Duty Diesel Vehicles	1	30.3	1.289	1.182	1.289	0.107	1.289
	2	34.4	1.210	1.110	1.210	0.100	1.210
	3	36.1	1.186	1.088	1.186	0.098	1.186
	4	39.0	1.153	1.057	1.153	0.096	1.153
	5	42.6	1.126	1.033	1.126	0.093	1.126
LDDT Light Duty Diesel Trucks	1	30.3	0.701	0.643	0.701	0.058	0.701
	2	34.4	0.650	0.596	0.650	0.054	0.650
	3	36.1	0.634	0.581	0.634	0.053	0.634
	4	39.0	0.612	0.561	0.612	0.051	0.612
	5	42.6	0.595	0.546	0.595	0.049	0.595
HDDV Heavy Duty Diesel Vehicles	1	30.3	2.694	2.470	2.694	0.224	2.694
	2	34.4	2.392	2.193	2.392	0.199	2.392
	3	36.1	2.300	2.109	2.300	0.191	2.300
	4	39.0	2.172	1.992	2.172	0.180	2.172
	5	42.6	2.072	1.900	2.072	0.172	2.072
MC Motorcycles	1	30.3	16.530	15.158	16.530	1.372	16.530
	2	34.4	14.800	13.572	14.800	1.228	14.800
	3	36.1	14.230	13.049	14.230	1.181	14.230
	4	39.0	13.400	12.288	13.400	1.112	13.400
	5	42.6	12.640	11.591	12.640	1.049	12.640

Facility Type - Collectors					Pollutant - CO		Net Emission Factor (grams/mile)
Vehicle Class	Area Type	Speed	I/M		No I/M		
			EF	0.917*EF	EF	0.083*EF	
LDGV Light Duty Gasoline Vehicles	1	18.2	10.450	9.583	14.270	1.184	10.767
	2	19.1	10.330	9.473	14.070	1.168	10.640
	3	24.4	9.990	9.161	13.460	1.117	10.278
	4	24.7	9.980	9.152	13.430	1.115	10.266
	5	28.2	9.970	9.142	13.330	1.106	10.249
LDGT1 Light Duty Gasoline Trucks 1	1	18.2	13.320	12.214	18.170	1.508	13.723
	2	19.1	13.220	12.123	17.990	1.493	13.616
	3	24.4	13.020	11.939	17.500	1.453	13.392
	4	24.7	13.010	11.930	17.490	1.452	13.382
	5	28.2	13.080	11.994	17.450	1.448	13.443
LDGT2 Light Duty Gasoline Trucks 2	1	18.2	15.890	14.571	22.930	1.903	16.474
	2	19.1	15.750	14.443	22.690	1.883	16.326
	3	24.4	15.420	14.140	21.980	1.824	15.964
	4	24.7	15.400	14.122	21.950	1.822	15.944
	5	28.2	15.420	14.140	21.810	1.810	15.950
HDGV Heavy Duty Gasoline Vehicles	1	18.2	21.940	20.119	25.230	2.094	22.213
	2	19.1	20.870	19.138	24.000	1.992	21.130
	3	24.4	16.030	14.700	18.430	1.530	16.229
	4	24.7	15.820	14.507	18.190	1.510	16.017
	5	28.2	13.800	12.655	15.860	1.316	13.971
LDDV Light Duty Diesel Vehicles	1	18.2	1.776	1.629	1.776	0.147	1.776
	2	19.1	1.722	1.579	1.722	0.143	1.722
	3	24.4	1.466	1.344	1.466	0.122	1.466
	4	24.7	1.455	1.334	1.455	0.121	1.455
	5	28.2	1.343	1.232	1.343	0.111	1.343
LDDT Light Duty Diesel Trucks	1	18.2	1.020	0.935	1.020	0.085	1.020
	2	19.1	0.984	0.902	0.984	0.082	0.984
	3	24.4	0.817	0.749	0.817	0.068	0.817
	4	24.7	0.810	0.743	0.810	0.067	0.810
	5	28.2	0.737	0.676	0.737	0.061	0.737
HDDV Heavy Duty Diesel Vehicles	1	18.2	4.559	4.181	4.559	0.378	4.559
	2	19.1	4.350	3.989	4.350	0.361	4.350
	3	24.4	3.373	3.093	3.373	0.280	3.373
	4	24.7	3.330	3.054	3.330	0.276	3.330
	5	28.2	2.900	2.659	2.900	0.241	2.900
MC Motorcycles	1	18.2	25.250	23.154	25.250	2.096	25.250
	2	19.1	24.270	22.256	24.270	2.014	24.270
	3	24.4	19.860	18.212	19.860	1.648	19.860
	4	24.7	19.670	18.037	19.670	1.633	19.670
	5	28.2	17.570	16.112	17.570	1.458	17.570

Facility Type - Local								Pollutant - CO	
Vehicle Class	Area Type	Speed	I/M		No I/M		Net Emission Factor (grams/mile)		
			EF	0.917*EF	EF	0.083*EF			
LDGV Light Duty Gasoline Vehicles	1	12.9	11.440	10.490	15.900	1.320	11.810		
	2	12.9	11.440	10.490	15.900	1.320	11.810		
	3	12.9	11.440	10.490	15.900	1.320	11.810		
	4	12.9	11.440	10.490	15.900	1.320	11.810		
	5	12.9	11.440	10.490	15.900	1.320	11.810		
LDGT1 Light Duty Gasoline Trucks 1	1	12.9	14.210	13.031	19.690	1.634	14.665		
	2	12.9	14.210	13.031	19.690	1.634	14.665		
	3	12.9	14.210	13.031	19.690	1.634	14.665		
	4	12.9	14.210	13.031	19.690	1.634	14.665		
	5	12.9	14.210	13.031	19.690	1.634	14.665		
LDGT2 Light Duty Gasoline Trucks 2	1	12.9	17.050	15.635	24.940	2.070	17.705		
	2	12.9	17.050	15.635	24.940	2.070	17.705		
	3	12.9	17.050	15.635	24.940	2.070	17.705		
	4	12.9	17.050	15.635	24.940	2.070	17.705		
	5	12.9	17.050	15.635	24.940	2.070	17.705		
HDGV Heavy Duty Gasoline Vehicles	1	12.9	30.480	27.950	35.040	2.908	30.858		
	2	12.9	30.480	27.950	35.040	2.908	30.858		
	3	12.9	30.480	27.950	35.040	2.908	30.858		
	4	12.9	30.480	27.950	35.040	2.908	30.858		
	5	12.9	30.480	27.950	35.040	2.908	30.858		
LDDV Light Duty Diesel Vehicles	1	12.9	2.205	2.022	2.205	0.183	2.205		
	2	12.9	2.205	2.022	2.205	0.183	2.205		
	3	12.9	2.205	2.022	2.205	0.183	2.205		
	4	12.9	2.205	2.022	2.205	0.183	2.205		
	5	12.9	2.205	2.022	2.205	0.183	2.205		
LDDT Light Duty Diesel Trucks	1	12.9	1.300	1.192	1.300	0.108	1.300		
	2	12.9	1.300	1.192	1.300	0.108	1.300		
	3	12.9	1.300	1.192	1.300	0.108	1.300		
	4	12.9	1.300	1.192	1.300	0.108	1.300		
	5	12.9	1.300	1.192	1.300	0.108	1.300		
HDDV Heavy Duty Diesel Vehicles	1	12.9	6.199	5.684	6.199	0.515	6.199		
	2	12.9	6.199	5.684	6.199	0.515	6.199		
	3	12.9	6.199	5.684	6.199	0.515	6.199		
	4	12.9	6.199	5.684	6.199	0.515	6.199		
	5	12.9	6.199	5.684	6.199	0.515	6.199		
MC Motorcycles	1	12.9	34.190	31.352	34.190	2.838	34.190		
	2	12.9	34.190	31.352	34.190	2.838	34.190		
	3	12.9	34.190	31.352	34.190	2.838	34.190		
	4	12.9	34.190	31.352	34.190	2.838	34.190		
	5	12.9	34.190	31.352	34.190	2.838	34.190		

Appendix 5.3

Vehicle Registration Data

ARIZONA DEPARTMENT OF TRANSPORTATION
MOTOR VEHICLE DIVISION
VEHICLE REGISTRATION REPORT

CTY	YEAR	VEH. YEAR SUBTOTAL	LIGHT GAS	DUTY VEH. DIESEL	LIGHT GAS	DUTY TRUCK TK1	DIESEL	HEAVY GAS	DUTY VEH. DIESEL	BUS	MOTOR- CYCLES	ALTERNATE FUELS	ELECTRIC
MAR	2002	154,688	118,528	550	23,403	2,656	1,873	897	1,739	285	4,181	51	525
MAR	2001	219,424	157,596	704	41,009	4,430	2,912	1,618	2,500	398	5,401	1,991	865
MAR	2000	220,921	158,207	920	35,077	4,101	2,604	4,987	3,873	388	4,676	2,378	3,710
MAR	1999	186,382	139,607	613	27,222	3,562	3,137	2,900	3,484	366	4,076	301	1,114
MAR	1998	161,213	119,108	533	28,187	3,049	815	2,683	2,241	347	2,984	462	804
MAR	1997	159,422	114,701	400	29,582	3,044	1,899	4,041	2,371	297	2,278	85	724
MAR	1996	134,920	100,834	340	23,035	2,714	1,206	1,531	2,272	194	2,036	79	679
MAR	1995	141,098	104,948	302	24,453	2,863	983	2,538	2,521	253	1,609	65	563
MAR	1994	123,265	88,597	252	23,877	2,777	613	2,057	2,987	217	1,329	80	479
MAR	1993	103,522	78,587	197	16,850	2,090	708	1,999	1,144	217	1,234	24	472
MAR	1992	81,364	63,821	226	12,557	1,464	426	567	794	159	849	28	473
MAR	1991	76,462	60,462	222	11,386	1,250	332	477	835	290	604	14	590
MAR	1990	71,905	54,194	159	9,997	1,174	258	427	4,279	203	612	11	591
MAR	1989	70,968	51,532	170	11,739	1,493	208	968	3,705	177	596	18	362
MAR	1988	57,426	42,265	178	8,830	1,227	139	1,998	1,691	169	573	14	342
MAR	1987	47,580	36,597	309	7,512	646	171	396	702	132	640	10	465
MAR	1986	44,981	30,961	274	9,832	928	297	497	662	131	1,036	9	354
MAR	1985	36,356	25,657	410	6,891	793	238	435	569	117	865	17	364
MAR	1984	26,570	18,511	406	5,130	548	258	261	379	97	636	12	332
MAR	1983	16,068	10,546	478	3,200	284	188	131	179	134	684	10	234
MAR	1982	12,257	7,016	434	2,601	331	203	159	168	102	846	6	391
MAR	1981	10,401	5,716	283	2,622	376	94	151	189	53	578	3	336
MAR	1980	8,027	4,424	221	1,714	280	52	190	172	61	508	8	397
MAR	1979	11,507	6,794	179	2,728	497	47	410	156	96	334	8	258
MAR	1978	10,261	5,935	102	2,799	527	30	183	112	71	337	12	153
MAR	1977	80,890	49,945	250	23,480	2,675	148	1,100	276	441	1,816	21	738
TOT	2002	2,267,878	1,655,089	9,112	395,713	45,779	19,839	33,601	40,000	5,395	41,318	5,717	16,315

Appendix 5.4

Minimum and Maximum Temperature Calculations

For the analysis of peak season ozone precursor emissions, the same methodology was used as for previous ozone precursor periodic inventories, using an amalgam of the top ten ozone concentration days in the late 1980s. A memo showing the calculation of the maximum and minimum daily temperature used for the peak ozone season inventory follows.

For the analysis of annual average ozone precursor emissions, each month was analyzed separately with unique temperature data for each month. Average monthly minimum and maximum temperatures for each month of 2002 were obtained from the NOAA Local Climatological Data (LCD) reports for Sky Harbor Airport. Specifically, the average maximum and minimum temperatures for each month, as reported in the LCD reports were averaged by MAG to obtain annual average daily maximum and minimum temperatures, as shown in the table below. A portion of the LCD report for January 2002 also follows.

Month	Daily Max	Daily Min	Number of Days
January	67.1	44.8	31
February	74.8	47.8	28
March	78.1	52.3	31
April	89.2	64.1	30
May	95.2	68.2	31
June	107.3	79.5	30
July	107.2	84.8	31
August	106.2	83.9	31
September	101.4	78.2	30
October	86.2	64.0	31
November	78.5	55.3	30
December	65.0	45.4	31
Annual Average	88.1	64.1	



ENVIRONMENTAL QUALITY & COMMUNITY SERVICES AGENCY
DIVISION OF AIR POLLUTION CONTROL
2406 South 24th Street, Suite E-214
Phoenix, Arizona 85034

(602) 506-6700
(602) 506-6862 (FAX)

April 11, 1992

Cari Anderson
Maricopa Association of Governments
Transportation & Planning Office
2617 S. 46th St.
Phoenix, AZ 85034

Dear Cari:

Following EPA's interim guidance on temperature determinations, I have calculated the average minimum and maximum temperatures for ozone and carbon monoxide SIP emission inventory calculations. I have also calculated the ambient temperature for ozone should you have to use this factor.

The attached tables show the calculations. Please call if you have any questions.

Sincerely,

Jo Crumbaker, Manager
Planning and Analysis

cc: Gary Neuroth, ADEQ

JC/cj/ndkma:lr

TABLE 1
CARBON MONOXIDE
SEASON: NOVEMBER - JANUARY
(88-89, 89-90, 90-91)

	<u>DATE</u>	<u>SITE</u>	<u>MAX. CONC.</u>	<u>MAX. TEMP.</u>	<u>MIN. TEMP.</u>
1.	1-01-89	W. Phx	15.3	65	35
2.	1-17-89	W. Phx	12.6	69	40
3.	11-24-88	W. Phx	12.4	63	49
4.	12-14-89	WISR	12.2	68	37
5.	1-12-89	W. Phx	11.9	75	40
6.	11-17-90	WISR	11.6	86	63
7.	1-19-89	W. Phx	11.5	77	44
8.	12-09-89	WISR	11.2	75	47
*	1-01-89	C. Phx	11.2		
9.	11-23-88	W. Phx	11.0	77	49
10.	12-03-88	C. Phx	11.0	77	47
*	12-14-89	W. Phx	11.0		
Average				73.1 73°F	45.1 45°F

* Value not included in ranking because the associated date was identified with a previous max value.

JC/dg/Tabl1.C4

TABLE 2

OZONE

SEASON: JULY - SEPTEMBER

	<u>DATE</u>	<u>SITE</u>	<u>MAX. CONC.</u>	<u>MAX. TEMP.</u>	<u>MIN. TEMP.</u>
1.	7-11-90	VEI	.141	107	83
2.	9-06-90	Papago	.141	95	72
*	9-06-90	VEI	.14		
3.	9-09-88	Glendale	.140	108	80
4.	9-13-90	Papago	.138	98	71
*	9-13-90	VEI	.13		
5.	9-08-90	VEI	.13	103	78
6.	9-10-90	Papago	.130	98	78
*	9-10-90	VEI	.13		
*	9-10-90	W. Phx	.127		
*	9-10-90	S. Phx	.126		
*	9-08-90	Papago	.126		
*	9-08-90	Glendale	.126		
*	9-9-88	C. Phx	.125		
7.	7-02-89	VEI	.124	112	83
8.	7-26-90	VEI	.124	111	85
9.	8-4-90	LKPL	.124	109	6
10.	9-11-90	LKPL	.124	<u>98</u>	<u>80</u>
Average:				103.9°F 104°F	79.7°F 80°

* Value not included in the ranking because the associated date was identified with a previous max value.

$$\begin{aligned}
 \text{Ambient temp} &= [(2/3) \times (\text{Avg. Max. Temp.} - \text{Avg. min. Temp.})] + \text{avg. min. temp.} \\
 &= 2/3 \times (104 - 80) + 80 \\
 &= 96^{\circ}\text{F}
 \end{aligned}$$

JC/dg/Tabls2.03

155: 0:92-0:73

(6) LATITUDE 26° N LONGITUDE 112° 01' W ELEVATION ABOVE SEA LEVEL 1110 FEET NAME OF MOUNTAIN (7)

PHOENIX, AZ
MAY 1955

.DATA IN COLS 6 AND 12-15 ARE BASED ON 21 OR MORE OBSERVATIONS AT HOURLY INTERVALS. RESULTANT WIND IS THE VECTOR SUM OF WIND SPEEDS AND DIRECTIONS DIVIDED BY THE NUMBER OF OBSERVATIONS. COLS 16 & 17: PEAK GUST - HIGHEST INSTANTANEOUS WIND SPEED. ONE OF TWO WIND SPEEDS IS GIVEN UNDER COLS 18 & 19: FASTEST MILE - HIGHEST RECORDED SPEED FOR WHICH A MILE OF WIND PASSES STATION (DIRECTION IN COMPASS POINTS). FASTEST OBSERVED ONE MINUTE WIND - HIGHEST ONE MINUTE SPEED (DIRECTION IN TERMS OF DEGREES). ERRORS WILL BE CORRECTED IN SUBSEQUENT PUBLICATIONS.

Kenneth D. Halpern
DIRECTOR
NATIONAL CLIMATIC DATA CENTER

NATIONAL
CLIMATIC DATA CENTER
ASHEVILLE NORTH CAROLINA

DIRECTOR
NATIONAL CLIMATIC DATA CENTER

JUL 1989
PHOENIX, AZ
NAT'L WEA SER FCST OFC
2633 E. BUCKEYE RD.

1554 1178-0471

LOCAL CLIMATOLOGICAL DATA

Monthly Summary



SKY HARBOR INTL AIRPORT

LATITUDE 33° 26' N LONGITUDE 112° 01' W ELEVATION 1420 M (4650 FT) TIME ZONE MOUNTAIN 23123

DATE	TEMPERATURE °F				DEGREE DAYS BASE 65°F		WEATHER TYPES	SNOW ICE PELLETS OR ICE ON GROUND AT 0500 INCHES	PRECIPITATION	AVERAGE STATION PRESSURE	WIND M.P.H.				SUNSHINE		ICE COVER TEXTS			
	MAXIMUM	MINIMUM	AVERAGE	DEPARTURE FROM NORMAL	AVERAGE DEW POINT	HEATING DEGREE BEGINNING WITH JUL 7A					COOLING DEGREE BEGINNING WITH JAN 7B	IN INCHES	IN INCHES	ELEV. 1107 FEET ABOVE M.S.L.	PEAK GUST	DIRECTION		FASTEST 1-MIN	MINUTES	PERCENT OF TOTAL POSSIBLE
01	112	81	97	6	41	0	32	0	0.00	0.0	28.630	30	2.4	5.9	22	NW	12	27	360	100
02	112	83	98	7	45	0	33	0	0.00	0.0	28.660	29	2.7	4.7	18	NW	13	27	350	100
03	115	82	99	8	37	0	34	0	0.00	0.0	28.640	24	2.0	5.7	21	W	12	25	353	100
04	118*	83	101	10	38	0	36	0	0.00	0.0	28.620	24	2.1	6.6	18	SW	14	26	359	100
05	114	87	101	10	47	0	36	0	0.00	0.0	28.650	26	3.6	8.4	18	W	17	25	358	100
06	113	88	101	9	53	0	36	0	0.00	0.0	28.680	28	4.1	6.6	17	SW	12	25	355	94
07	112	91	102	10	54	0	37	0	0.00	0.0	28.730	30	3.9	6.9	17	NW	13	23	357	100
08	111	90	101	9	55	0	36	0	0.00	0.0	28.670	29	3.8	8.0	26	E	16	29	358	82
09	107	84	96	4	55	0	31	0	0.00	0.0	28.630	23	2.2	9.0	25	W	16	27	320	96
10	105	83	94	2	51	0	29	0	0.00	0.0	28.680	13	4.4	8.4	31	SE	16	14	357	72
11	100	79	90	-2	60	0	25	0	0.00	0.0	28.780	06	1.5	6.2	17	W	12	29	751	89
12	109	83	96	4	54	0	31	0	0.00	0.0	28.770	27	1.4	5.5	17	W	13	27	353	100
13	114	83	99	8	43	0	34	0	0.00	0.0	28.670	25	4.6	5.7	21	W	13	28	351	100
14	115*	87	101	9	49	0	36	0	0.00	0.0	28.610	25	4.8	7.9	24	W	15	25	351	100
15	109	87	98	5	61	0	33	0	0.00	0.0	28.710	28	7.2	9.0	16	W	14	27	325	97
16	107	88	98	5	58	0	33	0	0.00	0.0	28.755	29	3.6	5.9	17	W	10	28	755	89
17	113	88	99	6	56	0	34	0	0.00	0.0	28.700	28	4.1	6.2	20	W	15	27	948	100
18	115	88	102	9	50	0	37	0	0.00	0.0	28.640	26	5.1	6.4	17	W	15	27	846	100
19	116	90	103	10	55	0	38	0	0.00	0.0	28.660	13	6.4	10.0	36	NE	23	06	946	100
20	113	93	103*	10	57	0	38	0	0.00	0.0	28.655	14	2.0	8.7	23	E	14	09	753	91
21	109	79	95	1	61	0	29	0	0.00	0.0	28.650	26	2.4	9.6	37	SW	21	22	735	87
22	104	80	92	-1	56	0	27	0	0.00	0.0	28.710	26	3.7	7.4	18	W	14	27	764	91
23	109	86	98	5	52	0	33	0	0.00	0.0	28.700	23	4.1	7.2	24	SW	16	24	727	86
24	111	88	100	7	61	0	35	0	0.00	0.0	28.620	10	1.2	7.2	17	W	14	27	734	87
25	110	89	100	7	59	0	35	0	0.00	0.0	28.620	10	7.3	11.3	33	NE	26	06	781	93
26	108	86	97	4	60	0	32	0	0.00	0.0	28.710	10	6.0	9.1	24	SE	17	14	756	90
27	105	76	91	-1	61	0	26	0	0.00	0.0	28.760	11	4.7	8.9	33	W	17	02	710	85
28	100	76*	88*	-4	66	0	23	0	0.00	0.0	28.730	10	2.4	5.8	22	NE	14	08	625	75
29	104	83	94	2	64	0	29	0	0.00	0.0	28.680	35	2.3	6.8	18	W	12	27	803	97
30	108	86	97	5	62	0	32	0	0.00	0.0	28.640	18	1.3	6.1	20	NE	12	06	819	99
31	108	88	98	6	64	0	33	0	0.00	0.0	28.640	11	4.1	7.3	36	W	19	25	648	78
SUM	SUM					TOTAL	TOTAL		TOTAL	TOTAL	FOR THE MONTH:					TOTAL				
3404	2635					0	1013		0.13	0.0	28.680	24	1.0	7.4	37	SW	26	06	24399	100
AVG	AVG	AVG	DEP	AVG	DEP				DEP							DATE: 21	DATE: 25			
109.8	85.0	97.4	5.11	55.4	0	167			-0.61										25257	93.1
NUMBER OF DAYS				SEASON TO DATE				GREATEST IN 24 HOURS AND DATES				GREATEST DEPTH ON GROUND OF				SNOW, ICE PELLETS OR ICE AND DATE				
				TOTAL				SNOW, ICE PELLETS				PRECIPITATION				SNOW, ICE PELLETS				
MAXIMUM TEMP				MINIMUM TEMP				HEAVY FOG				0.06 + 27-28				0				
2 30° L & 30°				0 32°				0				0				0				
3: 1				0 1				0 1038				CLEAR 15				PARTLY CLOUDY 16				

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
† TRACE AMOUNT.
* ALSO ON EARLIER DATE(S).
HEAVY FOG: VISIBILITY 1/4 MILE OR LESS.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.

DATA IN COLS 6 AND 12-15 ARE BASED ON 21 OR MORE OBSERVATIONS AT HOURLY INTERVALS. RESULTANT WIND IS THE VECTOR SUM OF WIND SPEEDS AND DIRECTIONS DIVIDED BY THE NUMBER OF OBSERVATIONS. COLS 16 & 17: PEAK GUST - HIGHEST INSTANTANEOUS WIND SPEED. ONE OF TWO WIND SPEEDS IS GIVEN UNDER COLS 18 & 19: FASTEST MILE - HIGHEST RECORDED SPEED FOR WHICH A MILE OF WIND PASSES STATION (DIRECTION IN COMPASS POINTS). FASTEST OBSERVED ONE MINUTE WIND - HIGHEST ONE MINUTE SPEED (DIRECTION IN TENS OF DEGREES). ERRORS WILL BE CORRECTED IN SUBSEQUENT PUBLICATIONS.

I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER

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AND INFORMATION SERVICE

NATIONAL
CLIMATIC DATA CENTER
ASHEVILLE NORTH CAROLINA

Kenneth D. Haden
DIRECTOR
NATIONAL CLIMATIC DATA CENTER

JUL 1990
PHOENIX, AZ
NAT'L MEA SER FCT OFC NOAA
2633 E. BUCKEYE RD.

1054 0178-9478

LOCAL CLIMATOLOGICAL DATA Monthly Summary

SKY HARBOR INTL AIRPORT

LATITUDE 33° 25' N LONGITUDE 112° 01' W ELEVATION (GROUND) 1110 FEET TIME ZONE MOUNTAIN 23:53



PHOENIX, AZ

DATE	TEMPERATURE °F					DEGREE DAYS BASE 65°F		WEATHER TYPES		SNOW ICE PELLETS OR ICE ON GROUND AT 0500 INCHES	PRECIPITATION		AVERAGE STATION PRESSURE IN INCHES	WIND IN P.H.I.				SUNSHINE		SEA COVER PERCENT		
	MAXIMUM	MINIMUM	AVERAGE	DEPARTURE FROM NORMAL	AVERAGE DEVIATION	HEATING SEASON BEGINNS WITH JUL	COOLING SEASON BEGINNS WITH JAN	1 FOG 2 HEAVY FOG 3 THUNDERSTORM 4 ICE PELLETS 5 HAIL 6 GLAZE 7 DUSTSTORM 8 SMOKE, HAZE 9 BLOWING SNOW	WATER EQUIVALENT INCHES		SNOW, ICE PELLETS INCHES	RESULTANT DIR		RESULTANT SPEED	AVERAGE SPEED	PEAK GUST	FASTEST 1-MIN	MINUTES	PERCENT OF TOTAL POSSIBLE			
01	115	90	103	12	61	0	38	3	0	0.00	0.0	28.600	28	2.0	5.5	32	MC	21	06	75.2	41	6
02	106	84	95	4	64	0	30	3	0	0.03	0.0	28.615	21	2.6	4.4	27	E	18	11	73.5	44	7
03	105	81	93	2	64	0	28	3	0	0.01	0.0	28.640	23	1.1	5.5	26	W	12	27	78.1	41	3
04	107	87	97	6	59	0	32	3	0	0.00	0.0	28.650	26	7.9	4.5	17	SW	11	26	84.4	38	3
05	100	87	94	3	59	0	29	3	0	0.00	0.0	28.660	09	4.8	5.5	13	E	9	12	55.9	77	8
06	98	84	91	-1	56	0	26	3	0	0.01	0.0	28.650	12	4.4	7.5	17	E	13	11	52.2	61	9
07	100	79	90	-2	63	0	25	3	0	0.03	0.0	28.640	15	3.0	9.1	39	S	25	17	74.4	87	3
08	100	78	89	-3	69	0	24	3	0	0.01	0.0	28.690	13	5.3	5.4	22	SE	16	15	79.7	93	5
09	104	80	92	0	66	0	27	3	0	0.00	0.0	28.750	15	2.5	5.3	17	N	13	26	74.0	87	5
10	106	79	93	1	67	0	28	3	0	0.27	0.0	28.740	08	1.9	8.6	32	NE	24	06	63.3	80	7
11	106	80	93	1	67	0	28	3	0	0.01	0.0	28.720	25	1.4	5.4	13	N	10	08	70.3	82	7
12	112	87	100	8	63	0	35	3	0	0.01	0.0	28.740	13	4.7	7.7	26	SE	14	16	70.0	82	8
13	110	86	98	5	61	0	33	3	0	0.00	0.0	28.770	15	2.6	3.0	14	SE	10	35	68.3	80	7
14	94	81	88	-5	65	0	23	3	0	0.01	0.0	28.680	26	6.1	3.4	17	N	14	28	50.8	69	9
15	91	74	83	-10	69	0	18	3	0	0.01	0.0	28.660	20	3.0	6.3	15	SE	13	17	60.7	77	9
16	100	82	91	-2	69	0	26	3	0	0.01	0.0	28.720	17	3.3	6.5	20	E	12	10	43.0	51	5
17	104	81	93	0	67	0	28	3	0	0.00	0.0	28.720	07	0.6	6.3	14	N	9	08	44.8	100	2
18	110	87	99	6	65	0	34	3	0	0.00	0.0	28.630	17	1.7	5.8	15	SW	10	24	84.6	100	0
19	112	88	100	7	64	0	35	3	0	0.00	0.0	28.590	23	2.9	8.9	15	SW	13	27	84.5	100	0
20	106	88	97	4	68	0	32	3	0	0.00	0.0	28.660	24	4.5	9.3	18	N	15	25	81.5	97	3
21	105	80	93	0	66	0	28	3	0	0.31	0.0	28.690	27	4.7	9.2	36	N	28	01	82.7	98	3
22	107	80	94	1	64	0	29	3	0	0.00	0.0	28.670	29	2.1	5.9	23	NW	14	36	78.8	94	3
23	104	82	93	0	60	0	28	3	0	0.00	0.0	28.660	14	5.5	6.1	39	E	29	11	81.7	97	4
24	97	72	85	-8	65	0	20	3	0	0.39	0.0	28.660	12	3.9	8.3	43	N	16	15	68.7	82	4
25	102	83	93	0	67	0	28	3	0	0.00	0.0	28.680	20	2.2	7.5	14	SE	10	25	81.3	97	3
26	104	84	94	1	61	0	29	3	0	0.00	0.0	28.720	27	1.5	6.0	18	NW	9	28	83.7	100	0
27	107	84	96	4	53	0	31	3	0	0.00	0.0	28.695	26	2.2	5.1	14	N	9	30	83.5	100	0
28	108	81	95	3	51	0	30	3	0	0.00	0.0	28.670	27	2.2	5.8	17	N	12	27	83.3	100	0
29	111	81	96	4	51	0	31	3	0	0.00	0.0	28.670	25	2.0	5.6	18	N	12	26	83.3	100	0
30	107	87	97	5	55	0	32	3	0	0.01	0.0	28.720	12	6.0	9.3	39	E	25	08	81.4	98	2
31	106	84	95	3	58	0	30	3	0	0.01	0.0	28.700	15	3.8	3.5	27	E	21	18	82.9	100	2
SUM		SUM	SUM	SUM	SUM	TOTAL	TOTAL	NUMBER OF DAYS	TOTAL	TOTAL	TOTAL	TOTAL	FOR THE MONTH	DATE: 24	DATE: 23	TOTAL	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT
3244	2561					0	895		1.05	0.0	28.680	18	1.5	7.3	43	N	29	11	26.75	86	1132	
AVG	AVG	AVG	DEP	AVG	DEP	DEP	PRECIPITATION	DEP	0.01													
104.6	82.6	93.6	1.3	62.9	0	49	0.01 INCH	7	0.31													
NUMBER OF DAYS				SEASON TO DATE				SNOW, ICE PELLETS	GREATEST IN 24 HOURS AND DATES				GREATEST DEPTH ON GROUND OF				SNOW, ICE PELLETS OR ICE AND DATE					
MAXIMUM TEMP				MINIMUM TEMP				0	THUNDERSTORMS				PRECIPITATION				SNOW, ICE PELLETS					
2	90°	6	32°	6	32°	6	0°	DEP	DEP	HEAVY FOG	0	0.39	1	24	0	0						
31	0	0	0	0	0	0	713	CLEAR	15	PARTLY CLOUDY	12	CLOUDY	4									

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
† TRACE AMOUNT.
* ALSO ON EARLIER DATE(S).
HEAVY FOG: VISIBILITY 1/4 MILE OR LESS.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.

DATA IN COLS 6 AND 12-15 ARE BASED ON 21 OR MORE OBSERVATIONS AT HOURLY INTERVALS. RESULTANT WIND IS THE VECTOR SUM OF WIND SPEEDS AND DIRECTIONS DIVIDED BY THE NUMBER OF OBSERVATIONS COLS 16 & 17: PEAK GUST - HIGHEST INSTANTANEOUS WIND SPEED. ONE OF TWO WIND SPEEDS IS GIVEN UNDER COLS 18 & 19: FASTEST MILE - HIGHEST RECORDED SPEED FOR WHICH A MILE OF WIND PASSES STATION (DIRECTION IN COMPASS POINTS). FASTEST OBSERVED ONE MINUTE WIND - HIGHEST ONE MINUTE SPEED (DIRECTION IN TERMS OF DEGREES). ERRORS WILL BE CORRECTED IN SUBSEQUENT PUBLICATIONS.

I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER

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ASHEVILLE NORTH CAROLINA

Kenneth D. Haden
DIRECTOR
NATIONAL CLIMATIC DATA CENTER

AUG 1990
PHOENIX, AZ
NAT'L WEA SER FCI OFC NOAA
2633 E. BUCKETE RD.

1554 2178-0415

LOCAL CLIMATOLOGICAL DATA

Monthly Summary



SKY HARBOR INTL AIRPORT

LATITUDE 33° 26' N

LONGITUDE 112° 01' W

ELEVATION (GROUND) 1110 FEET

TIME ZONE MOUNTAIN

23:33

PHOENIX, AZ

DATE	TEMPERATURE °F					DEGREE DAYS BASE 65°F		WEATHER TYPES	SNOW ICE PELLETS	PRECIPITATION	AVERAGE STATION PRESSURE	WIND IN P.H.					SUNSHINE		SEA COVER (TENTHS)						
	MAXIMUM	MINIMUM	AVERAGE	DEPARTURE FROM NORMAL	AVERAGE DEW POINT	HEATING SEASON BEGINNING JULY	COOLING SEASON BEGINNING JANUARY					PEAK GUST	DIRECTION	FASTEST 1-MIN	DIRECTION	MINUTES	PERCENT OF TOTAL POSSIBLE	SUMMARY IN SUNSHINE		HEIGHT TO CLOUD					
1	2	3	4	5	6	7A	7B	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
01	104	79	92	0	61	0	27		0	0	0	28.690	14	4.0	9.5	35	SE	24	14	787	95		5		
02	102	76	89	-3	63	0	24		0	0.00	0	28.740	21	0.5	6.8	15	N	12	14	777	93		2		
03	105	75	90	-2	62	0	25	3	0	0.33	0	28.740	24	1.7	6.1	26	M	18	15	790	96		2		
04	103	79	91	-1	63	0	26		0	0.00	0	28.740	12	2.8	4.8	15	NE	12	05	806	94		2		
05	108	85	97	6	59	0	32	3	0	0	0	28.755	10	6.7	8.2	22	SE	13	06	779	95		2		
06	105	87	96	5	62	0	31	3	0	0.01	0	28.800	11	7.0	8.1	22	E	14	07	648	71		3		
07	102	81	92	1	62	0	27		0	0.00	0	28.790	12	5.5	6.6	18	S	12	16	614	100		3		
08	108	85	97	6	60	0	32		0	0.00	0	28.730	12	4.4	6.6	15	S	12	20	817	100		3		
09	110	86	98	7	57	0	33		0	0.00	0	28.710	13	6.0	7.4	20	SE	14	14	815	100		1		
10	111	88	100	9	55	0	35		0	0.00	0	28.720	13	1.1	7.0	16	M	13	25	794	98		2		
11	105	75	90	-1	66	0	25	3	0	0.38	0	28.750	28	5.1	6.7	38	NW	17	32	693	85		7		
12	98	76	87	-3	64	0	22	3	0	0.05	0	28.750	11	2.5	6.6	31	NE	23	06	701	87		9		
13	94	78	86	-4	64	0	21		0	0	0	28.710	09	3.0	6.2	15	E	10	09	523	65		10		
14	78	71	75	-15	70	0	10		0	1.20	0	28.720	10	4.3	5.6	14	E	10	09	11	1		10		
15	88	70	79	-11	69	0	14	3	0	0.73	0	28.740	11	3.5	4.9	15	M	8	11	598	74		7		
16	97	77	87	-3	68	0	22		0	0.00	0	28.720	10	2.3	4.3	10	S	7	12	755	94		3		
17	100	79	90	0	65	0	25		0	0.00	0	28.695	19	0.4	4.2	12	SW	8	30	778	97		3		
18	103	81	92	2	55	0	27		0	0.00	0	28.640	10	4.4	5.8	13	SE	9	13	781	98		1		
19	102	79	91	2	52	0	26		0	0.00	0	28.670	15	4.4	8.2	17	S	14	20	764	96		3		
20	102	82	92	3	47	0	27		0	0.00	0	28.710	15	4.5	7.5	18	S	12	18	748	94		2		
21	102	76	89	0	49	0	24		0	0.00	0	28.780	07	1.9	5.4	12	SW	9	06	794	100		0		
22	104	77	91	2	50	0	26		0	0.00	0	28.710	12	1.1	5.4	13	NW	9	30	712	100		0		
23	105	77	91	2	49	0	26		0	0.00	0	28.620	11	4.1	5.9	15	S	9	16	790	100		0		
24	106	77	92	3	45	0	27		0	0.00	0	28.660	12	3.6	7.3	17	S	12	17	788	100		1		
25	102	75	89	0	44	0	24		0	0.00	0	28.720	15	2.3	5.8	18	E	10	15	796	100		1		
26	102	77	90	1	48	0	25		0	0.00	0	28.770	07	3.0	5.4	13	SE	10	09	767	98		2		
27	102	82	92	4	55	0	27		0	0.00	0	28.810	27	6.1	7.0	16	M	9	32	712	91		4		
28	105	82	94	6	66	0	29		0	0.00	0	28.750	26	3.6	6.6	14	M	12	24	781	100		1		
29	108	86	97	9	63	0	32		0	0.00	0	28.700	23	3.7	5.8	24	SE	16	15	778	100		2		
30	106	85	96	8	61	0	31		0	0.00	0	28.680	16	2.1	6.1	18	E	13	09	776	100		5		
31	95	81	89	1	67	0	24		0	0	0	28.700	10	5.0	5.9	16	E	12	09	747	44		7		
SUM		SUM				TOTAL	TOTAL			TOTAL	TOTAL	FOR THE MONTH:										TOTAL			
3163	2464					0	806			2.70	0.0	28.725	131	22	6.4	38	NW	24	14	22282	95		198		
AVG	AVG	AVG	DEP	AVG	DEP					PRECIPITATION	DEP		DATE: 11		DATE: 1										
102.0	79.5	90.9	0.9	58.6	0	34				1.68			DATE: 11		DATE: 1				24864	90		3			
NUMBER OF DAYS						SEASON TO DATE		SNOW, ICE PELLETS		GREATEST IN 24 HOURS AND DATES					GREATEST DEPTH ON GROUND OF										
						TOTAL	TOTAL	1.0 INCH	0						SNOW, ICE PELLETS ON ICE AND DATE										
MAXIMUM TEMP						1	0	3599	THUNDERSTORMS	6	PRECIPITATION	SNOW, ICE PELLETS													
1	90°	1	32°	1	0°	1	0	0	HEAVY FOG	0	1.90	14-15	0	0											
29	0	0	0	0	0	1	0	747	CLEAR	23	PARTLY CLOUDY	4	CLOUDY	4											

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
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- ALSO ON EARLIER DATE(S).
HEAVY FOG: VISIBILITY 1/4 MILE OR LESS.
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ASHEVILLE NORTH CAROLINA

Kenneth D. Wadsworth
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NATIONAL CLIMATIC DATA CENTER

SEP 1990
PHOENIX, AZ
NAT'L OCEANIC & ATMOSPHERIC ADMIN.
2633 E. BUCKETE RD

15TH 0198-0475

LOCAL CLIMATOLOGICAL DATA

Monthly Summary



SKT WARRIOR MIL AIRPORT

LATITUDE 33° 26' N LONGITUDE 112° 01' W ELEVATION (GROUND) 1110 FEET TIME ZONE MOUNTAIN 23:00

DATE	TEMPERATURE °F				DEGREE DAYS BASE 65°F		WEATHER TYPES	SNOW ICE PELLETS	PRECIPITATION		AVERAGE STATION PRESSURE	WIND IN P.M.T.				SUNSHINE			
	MAXIMUM	MINIMUM	AVERAGE	DEPARTURE FROM NORMAL	AVERAGE OF 5 DEPT	HEATING EARTH BEGINS JUL			WATER EQUIVALENT INCHES	SNOW, ICE PELLETS INCHES		RESULTANT DIRECTION	AVERAGE SPEED	PEAK GUST	DIRECTION	PERCENT OF TOTAL POSSIBLE	PERCENT OF TOTAL POSSIBLE	PERCENT OF TOTAL POSSIBLE	PERCENT OF TOTAL POSSIBLE
01	96	83	90	2	55	0	25	0	0.00	0.00	28.720	08	4.7	6.3	15	13	09	272	35
02	102	74	88	0	68	0	23	0	0.22	0.00	28.720	20	1.3	4.3	16	SE	9	144	47
03	104	75	90	3	69	0	25	3	0.03	0.00	28.710	13	1.6	8.0	37	NE	23	559	71
04	100	76	88	1	56	0	23	0	0.00	0.00	28.770	25	2.6	5.0	18	W	13	604	73
05	94	74	84	-1	70	0	19	3	0.06	0.00	28.820	27	4.5	6.5	13	NW	10	555	73
06	100	79	90	3	68	0	25	0	0.00	0.00	28.780	28	2.7	5.0	14	NW	9	763	100
07	105	82	94	7	63	0	29	0	0.00	0.00	28.700	24	1.6	3.5	12	W	8	761	100
08	109	84	96	4	63	0	31	0	0.00	0.00	28.660	14	1.1	4.4	12	SW	9	758	100
09	110	86	98	12	53	0	33	0	0.00	0.00	28.640	13	1.4	5.4	10	W	8	757	100
10	111	86	98	12	51	0	33	0	0.00	0.00	28.630	26	1.5	3.8	9	W	7	755	100
11	112	85	99	13	56	0	34	0	0.00	0.00	28.630	22	1.2	4.4	10	W	8	715	95
12	105	83	94	8	61	0	29	0	0.00	0.00	28.650	24	2.1	5.1	13	W	12	751	100
13	105	83	94	8	52	0	29	0	0.00	0.00	28.640	26	2.0	4.0	10	W	9	749	100
14	100	70	85	0	66	0	20	3	0.30	0.00	28.710	24	3.0	7.8	48	NE	35	674	90
15	88	69	79	-6	68	0	14	3	0.06	0.00	28.720	36	0.8	4.5	16	NW	8	435	53
16	95	73	84	-1	65	0	19	0	0.00	0.00	28.620	15	1.9	4.3	12	W	7	711	96
17	98	77	88	3	62	0	23	0	0.00	0.00	28.650	11	4.3	5.7	18	SE	14	510	80
18	98	77	88	4	62	0	23	0	0.00	0.00	28.670	10	5.1	6.8	15	E	12	428	53
19	97	72	85	1	55	0	20	0	0.00	0.00	28.630	10	3.6	6.9	12	W	10	736	100
20	93	67	80	-4	61	0	15	3	0.44	0.00	28.630	06	2.1	5.5	32	SW	13	540	74
21	95	72	84	1	63	0	19	0	0.00	0.00	28.750	14	1.6	4.8	16	W	12	651	90
22	95	71	83	0	62	0	18	0	0.00	0.00	28.810	15	1.3	3.5	14	SE	8	605	87
23	97	77	87	4	63	0	22	0	0.00	0.00	28.800	10	6.5	6.8	17	E	14	648	89
24	95	76	86	4	60	0	21	0	0.00	0.00	28.785	09	4.5	5.6	14	E	12	714	98
25	100	76	88	6	57	0	23	9	0.60	0.00	29.770	17	1.4	3.7	12	SE	7	680	94
26	99	75	87	5	51	0	22	0	0.00	0.00	28.730	12	1.0	3.6	10	S	7	692	96
27	99	72	86	5	48	0	21	0	0.00	0.00	28.635	19	1.5	4.6	12	W	9	720	100
28	94	71	83	2	46	0	18	0	0.00	0.00	28.630	12	1.9	5.8	12	W	9	718	100
29	93	69	81	0	43	0	16	0	0.00	0.00	28.685	11	3.0	4.0	14	SW	8	677	95
30	82	70	76	-4	51	0	11	0	0.00	0.00	28.790	10	6.5	7.4	24	NE	17	197	28
SUM																			
2971		2282		0		683		0		1.11		0.00		28.700		1.2		5.2	
ATG		ATG		DEP		ATG		DEP		PRECIPITATION		DATE: 14		DATE: 14		PRECIPITATION		DATE: 14	
99.0		76.1		27.6		3.0		40.5		0.47		22284		185		3.4		3.3	
NUMBER OF DAYS		TOTAL		TOTAL		TOTAL		TOTAL		GREATEST IN 24 HOURS AND DATES		GREATEST DEPTH ON GROUND OF		SNOW, ICE PELLET OR ICE AND DATE		GREATEST DEPTH ON GROUND OF		SNOW, ICE PELLET OR ICE AND DATE	
MAXIMUM TEMP		MINIMUM TEMP		DEP		DEP		HEAVY FOG		PRECIPITATION		SNOW, ICE PELLET		SNOW, ICE PELLET		SNOW, ICE PELLET		SNOW, ICE PELLET	
29.0		6.3		0.0		0.0		0.0		0.44		2.0		1.0		0.0		0.0	
29		0		0		0		0		0		0		0		0		0	

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
† TRACE AMOUNT.
+ ALSO ON EARLIER DATE(S).
HEAVY FOG: VISIBILITY 1/4 MILE OR LESS.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.

TORNADO OBSERVED DAY 3.

DATA IN COLS 6 AND 12-15 ARE BASED ON 21 OR MORE OBSERVATIONS AT HOURLY INTERVALS. RESULTANT WIND IS THE VECTOR SUM OF WIND SPEEDS AND DIRECTIONS DIVIDED BY THE NUMBER OF OBSERVATIONS. COLS 16 & 17: PEAK GUST - HIGHEST INSTANTANEOUS WIND SPEED. ONE OF TWO WIND SPEEDS IS GIVEN UNDER COLS 18 & 19: FASTEST MILE - HIGHEST RECORDED SPEED FOR WHICH A MILE OF WIND PASSES STATION (DIRECTION IN COMPASS POINTS). FASTEST OBSERVED ONE MINUTE WIND - HIGHEST ONE MINUTE SPEED (DIRECTION IN TENS OF DEGREES). ERRORS WILL BE CORRECTED IN SUBSEQUENT PUBLICATIONS.

I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER

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ASHEVILLE NORTH CAROLINA

Kenneth D. Hasler
DIRECTOR
NATIONAL CLIMATIC DATA CENTER

1989 LOCAL CLIMATOLOGICAL DATA

ANNUAL SUMMARY WITH COMPARATIVE DATA

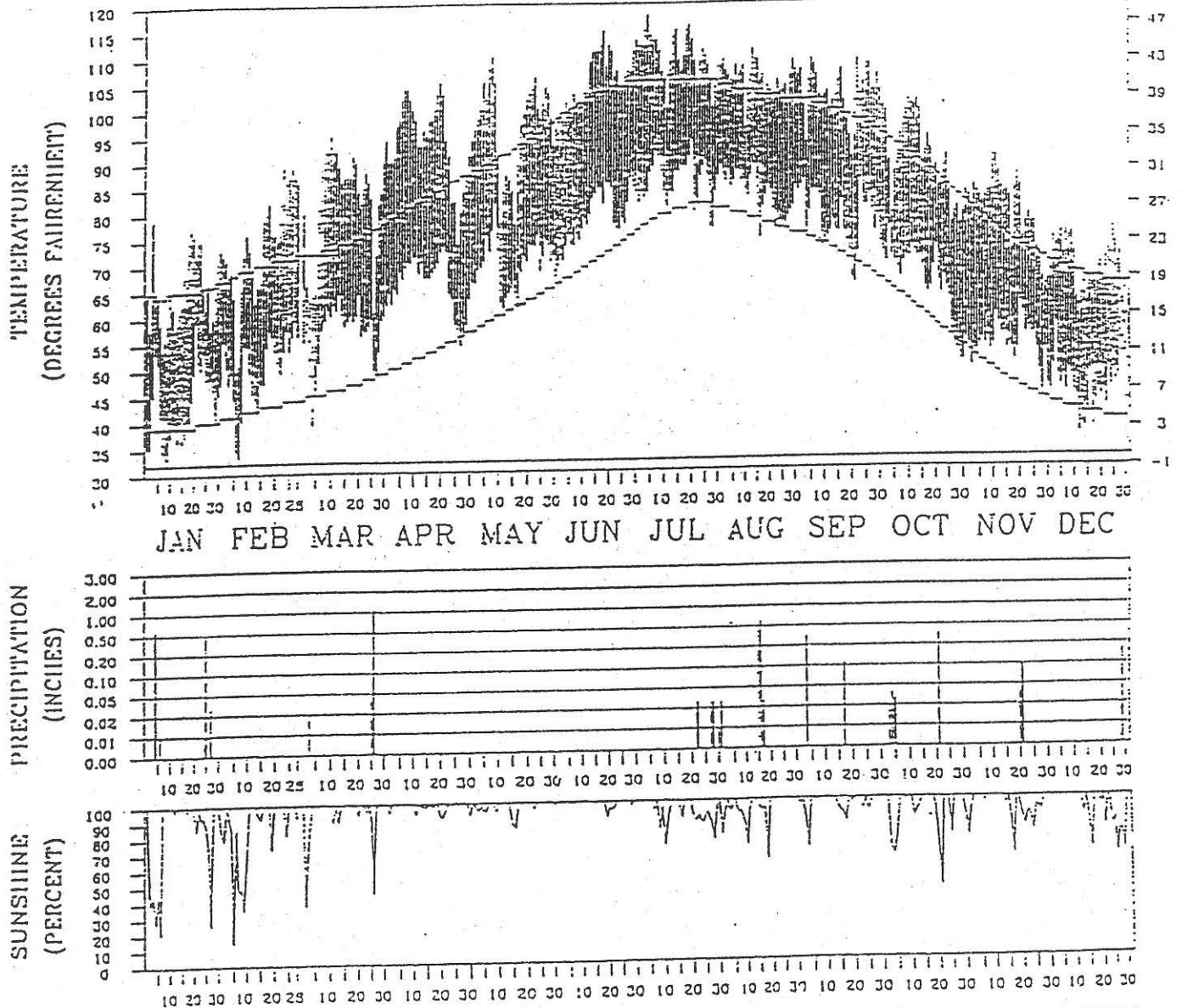
PHOENIX, ARIZONA



Daily Data

RECEIVED

MAY 23 1990



TEMPERATURE DEPICTS NORMAL MAXIMUM, NORMAL MINIMUM AND ACTUAL DAILY HIGH AND LOW VALUES (FAHRENHEIT)
 PRECIPITATION IS MEASURED IN INCHES. SCALE IS NON-LINEAR
 SUNSHINE IS PERCENT OF THE POSSIBLE SUNSHINE

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ASHEVILLE NORTH CAROLINA

Kenneth D. Nelson
 DIRECTOR
 NATIONAL CLIMATIC DATA CENTER



JANUARY 2002

LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

PHOENIX, AZ

SKY HARBOR INTL AIRPORT (PHX)

Lat: 33°26' N Long: 111°59' W Elev (Ground): 1103 Feet

Time Zone: MOUNTAIN WBAN: 23183 ISSN #: 0198-0475

DATE	TEMPERATURE °F						DEG DAYS BASE 65°		WEATHER	SNOW/ICE ON GND (IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND SPEED = MPH DIR = TENS OF DEGREES								DATE				
	MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	HEATING	COOLING		0500 LST	1100 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	MAXIMUM									
																			5-SEC 2-MIN									
																			SPEED	DIR	SPEED	DIR						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24					
01	67	44	56	3	38	47	9	0	RA				0.00	28.91	30.08	1.8	10	4.1	16	05	14	06	01					
02	65	50	58	5	29	45	7	0					0.00	28.95	30.11	9.4	07	9.6	22	06	18	06	02					
03	66	47	57	4	32	46	8	0					0.00	28.89	30.05	1.6	07	4.7	17	08	15	08	03					
04	67	44	56	3	35	46	9	0					0.00	28.94	30.10	1.4	24	5.2	17	26	15	26	04					
05	65	41	53	0	26	42	12	0					0.00	29.14	30.32	0.8	22	3.1	15	07	10	06	05					
06	67	41	54	1	25	41	11	0					0.00	29.12	30.29	1.0	12	3.2	9	30	9	10	06					
07	72	44	58	5	32	45	7	0					0.00	29.06	30.23	2.1	09	3.4	9	30	9	08	07					
08	81*	47	64	11	37	50	1	0					0.00	28.90	30.05	2.1	10	2.7	10	09	9	08	08					
09	72	53	63	10	38	50	2	0					0.00	28.79	29.94	3.8	11	5.5	13	14	10	10	09					
10	74	55	65*	12	40	51	0	0					T	28.85	30.00	1.6	06	6.1	37*	05	31*	05	10					
11	76	50	63	10	32	48	2	0	HZ				0.00	29.03	30.19	4.3	06	6.3	23	05	20	05	11					
12	74	47	61	8	32	47	4	0					0.00	28.98	30.14	2.1	11	3.2	13	12	13	07	12					
13	71	44	58	5	31	45	7	0					0.00	28.78	29.94	2.9	10	4.6	12	10	9	09	13					
14	73	45	59	5	29	45	6	0					0.00	28.76	29.92	3.6	11	5.1	14	08	13	09	14					
15	69	49	59	5	31	45	6	0					0.00	28.74	29.90	3.7	09	5.3	13	08	12	08	15					
16	64	53	59	5	42	50	6	0					0.00	28.82	29.98	1.5	28	4.6	18	30	16	31	16					
17	62	45	54	0	29	42	11	0					0.00	28.91	30.07	2.1	25	3.5	10	01	8	22	17					
18	63	39	51	-3	25	40	14	0					0.00	28.95	30.12	1.7	14	4.3	15	27	13	28	18					
19	62	39	51	-3	16	37	14	0					0.00	28.90	30.07	2.4	09	3.5	16	08	15	07	19					
20	61	36	49	-5	17	37	16	0					0.00	28.90	30.08	0.9	10	3.4	10	32	8	26	20					
21	67	38	53	-1	18	38	12	0	TSRA RA				0.00	28.86	30.03	2.2	10	4.7	14	09	14	09	21					
22	67	40	54	-1	21	40	11	0					0.00	28.73	29.90	3.3	09	5.8	16	10	14	09	22					
23	61	49	55	-1	22	41	10	0					0.00	28.79	29.95	5.5	27	9.1	24	28	21	26	23					
24	64	38	51	-5	9	36	14	0					0.00	29.10	30.28	2.3	35	5.9	20	02	16	07	24					
25	72	41	57	1	17	41	8	0					0.00	28.99	30.16	4.9	09	5.8	23	07	21	06	25					
26	75	43	59	3	24	44	6	0					0.00	28.83	29.98	3.8	11	4.7	13	17	10	18	26					
27	68	47	58	2	31	46	7	0					0.00	28.77	29.92	3.1	09	4.5	16	36	12	09	27					
28	65	52	59	3	32	46	6	0					0.00	28.76	29.91	0.4	28	5.3	18	29	16	29	28					
29	60	50	55	-1	28	43	10	0					0.00	28.74	29.90	5.0	27	6.2	18	27	16	27	29					
30	54	42	48	-8	31	40	17	0					0.05	28.79	29.96	6.5	29	9.2	25	29	22	28	30					
31	55	36*	46*	-10	26	38	19	0				0.00	29.08	30.27	2.4	09	4.3	16	09	12	09	31						
67.1 44.8 56.0 ■■										< MONTHLY AVERAGES TOTALS-->				0.05	28.90	30.06	1.3	09	5.1	<-- MONTHLY AVERAGES								
2.1 1.4 1.8 ■■										<-----DEPARTURE FROM NORMAL----->										-.78	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3							
DEGREE DAYS									GREATEST 24-HR PRECIPITATION: 0.05 DATE :30					SEA LEVEL PRESSURE DATE TIME														
MONTHLY									GREATEST 24-HR SNOWFALL: DATE :					MAXIMUM : 30.40 05 0956														
TOTAL DEPARTURE									GREATEST SNOW DEPTH: DATE :					MINIMUM : 29.82 22 1656														
HEATING: 272 -32 681 -56									NUMBER OF DAYS WITH ➡					MAXIMUM TEMP ≥ 90: 0														
COOLING: 0 -2 0 -2														MAXIMUM TEMP ≤ 32 : 0														
														MINIMUM TEMP ≤ 0 : 0														
														HEAVY FOG : 0														
														PRECIPITATION ≥ 0.01 INCH : 1														
														PRECIPITATION ≥ 0.10 INCH : 0														
														SNOWFALL ≥ 1.0 INCH :														
														:														

JANUARY 2002
PHOENIX, AZ

Appendix 5.5

VMT Reasonableness Calculations

Vehicle miles traveled (VMT) per gallon of gasoline consumed was calculated to check the reasonableness of the VMT numbers used in compiling the onroad portion of the 2002 Periodic Inventory. The following calculations were made to arrive at the VMT per gallon of gasoline consumed in the Maricopa County nonattainment area in 2002. The answer of 18.16 miles per gallon (mpg) falls within the acceptable range listed in the Appendix B Level II Quality Review Checklist of the Quality Review Guidelines for 1990 Base Year Emission Inventories, July 1992 of 14.6 and 24.4 mpg.

The Arizona Department of Transportation estimated that 1.459×10^9 gallons of gasoline were sold in Maricopa County in 2002. Annual Average Daily VMT (AADVMT) of the county is previously estimated in this report as 73.579×10^6 VMT (See Table 5-1(b), page 6).

Annual VMT = AADVMT \times 365 days/year = 265.11×10^8 VMT.

VMT per gallon of gasoline consumed = 265.11×10^8 VMT / 1.459×10^9 gallons of gasoline = 18.40 miles per gallon.

The estimate miles per gallon consumed in the 1999 periodic inventory was 15.84 miles per gallon. Both estimates are well within the acceptable range listed in the quality review checklist.

Appendix 5.6

FORTRAN Source Code for Emission Factor Weighting Program

Program NEIProgram

* This program reads in the monthly MOBILE6 output files, both I/M
 * and non-I/M and averages all of the results together into
 * an annual average set of emission factors.

*
 * There will be 24 runs, two for each month.
 *

```
character*15 filename(12,2)
character*130 line1
character*3 month(12),IM(2),poll(3),scen(16)
real*8 ef(12,2,3,16,10),efmerg(3,16,10)
```

```
data ef / 11520*0.0 /
data efmerg / 480*0.0 /
```

```
data filename /'IMJAN02.TXT',
+      'IMFEB02.TXT',
+      'IMMAR02.TXT',
+      'IMAPR02.TXT',
+      'IMMAY02.TXT',
+      'IMJUN02.TXT',
+      'IMJUL02.TXT',
+      'IMAUG02.TXT',
+      'IMSEP02.TXT',
+      'IMOCT02.TXT',
+      'IMNOV02.TXT',
+      'IMDEC02.TXT',
+      'NIMJAN02.TXT',
+      'NIMFEB02.TXT',
+      'NIMMAR02.TXT',
+      'NIMAPR02.TXT',
+      'NIMMAY02.TXT',
+      'NIMJUN02.TXT',
+      'NIMJUL02.TXT',
+      'NIMAUG02.TXT',
+      'NIMSEP02.TXT',
+      'NIMOCT02.TXT',
+      'NIMNOV02.TXT',
+      'NIMDEC02.TXT' /
data month /'Jan','Feb','Mar','Apr','May','Jun',
+      'Jul','Aug','Sep','Oct','Nov','Dec'/
data IM /'IM','NIM'/
data poll /'VOC','CO','NOx'/
data scen /'F-1','F-2','F-3','F-4','F-5',
+      'A-1','A-2','A-3','A-4','A-5',
+      'C-1','C-2','C-3','C-4','C-5','L-A'/
```

```
ipoll=0
iscen=1
do 100 i12=1,12
  do 110 i2=1,2
    open(unit=20,file=filename(i12,i2),status='old')
    do 120 i10000=1,10000
      read(20,99,end=121) line1
      if(line1(6:14).eq.'Composite') then
c        write(*,*) line1
        ipoll=ipoll+1
```

```

        if(ipoll.gt.3) then
ipoll=1
        iscen=iscen+1
        endif
        if(iscen.gt.16) iscen=1
        read(line1,97,err=120)
+       ef(i12,i2,ipoll,iscen,1),
+       ef(i12,i2,ipoll,iscen,2),
+       ef(i12,i2,ipoll,iscen,3),
+       ef(i12,i2,ipoll,iscen,4),
+       ef(i12,i2,ipoll,iscen,5),
+       ef(i12,i2,ipoll,iscen,6),
+       ef(i12,i2,ipoll,iscen,7),
+       ef(i12,i2,ipoll,iscen,8),
+       ef(i12,i2,ipoll,iscen,9),
+       ef(i12,i2,ipoll,iscen,10)
        endif
120    continue
121    close(20)
110    continue
100    continue
        do 210 it3=1,3
        do 220 it4=1,16
        do 230 it5=1,10
        efmerg(it3,it4,it5) = (
+       ef(1,1,it3,it4,it5)*0.98*31./365.*.917 +
+       ef(2,1,it3,it4,it5)*1.03*28./365.*.917 +
+       ef(3,1,it3,it4,it5)*1.03*31./365.*.917 +
+       ef(4,1,it3,it4,it5)*1.03*30./365.*.917 +
+       ef(5,1,it3,it4,it5)*0.99*31./365.*.917 +
+       ef(6,1,it3,it4,it5)*0.98*30./365.*.917 +
+       ef(7,1,it3,it4,it5)*0.94*31./365.*.917 +
+       ef(8,1,it3,it4,it5)*0.96*31./365.*.917 +
+       ef(9,1,it3,it4,it5)*0.99*30./365.*.917 +
+       ef(10,1,it3,it4,it5)*1.02*31./365.*.917 +
+       ef(11,1,it3,it4,it5)*1.02*30./365.*.917 +
+       ef(12,1,it3,it4,it5)*1.04*31./365.*.917 +
+       ef(1,1,it3,it4,it5)*0.98*31./365.*.083 +
+       ef(2,1,it3,it4,it5)*1.03*28./365.*.083 +
+       ef(3,1,it3,it4,it5)*1.03*31./365.*.083 +
+       ef(4,1,it3,it4,it5)*1.03*30./365.*.083 +
+       ef(5,1,it3,it4,it5)*0.99*31./365.*.083 +
+       ef(6,1,it3,it4,it5)*0.98*30./365.*.083 +
+       ef(7,1,it3,it4,it5)*0.94*31./365.*.083 +
+       ef(8,1,it3,it4,it5)*0.96*31./365.*.083 +
+       ef(9,1,it3,it4,it5)*0.99*30./365.*.083 +
+       ef(10,1,it3,it4,it5)*1.02*31./365.*.083 +
+       ef(11,1,it3,it4,it5)*1.02*30./365.*.083 +
+       ef(12,1,it3,it4,it5)*1.04*31./365.*.083)

230    continue
220    continue
210    continue
        do 300 iscen=1,16
        write(*,*) ' '
        do 310 ipoll=1,3
        write(*,96) (efmerg(ipoll,iscen,it5),it5=1,10)

```

```
      +      , poll(ipoll), scen(iscen)
310  continue
300  continue
97   format(20x,f11.0,4(f10.0),f9.0,4(f10.0))
98   format(f11.4,4(f10.4),f9.4,4(f10.4),4(a5))
96   format(f11.4,4(f10.4),f9.4,4(f10.4),2(a5))
99   format(a130)
      stop
      end
```


Appendix 5.7

Monthly Gasoline Data

Gasoline quality data for each month of the year was obtained from the Arizona Department of Weights and Measures. The fuel quality for each month is shown below. Oxygenate data for the months January through March were not provided, so the similar carbon monoxide season months November and December were averaged and this oxygenate settings were used for January through March.

Month	RVP	Sulfur content	MTBE Market Share	Ethanol Market Share	MTBE % Weight	Ethanol % Weight
January	9.0	26.2	0%	100%	0	3.1
February	8.9	33.9	0%	100%	0	3.1
March	8.9	39.6	0%	100%	0	3.1
April	7.5	50.2	100%	0%	1.5	0
May	7.0	42.1	100%	0%	1.7	0
June	6.6	69.1	100%	0%	1.8	0
July	6.6	88.9	100%	0%	1.8	0
August	6.5	71.5	100%	0%	1.9	0
September	6.6	67.3	100%	0%	2.0	0
October	8.0	64.3	40%	60%	1.4	3.2
November	8.4	48.9	0%	100%	0	3.0
December	8.7	42.0	0%	100%	0	3.2
Annual Average*	7.8	52.5	50%	50%	1.9	3.1

* Note that the annual average may not equal the average of the twelve constituent months because the annual average weights were calculated as the average of the 793 gasoline samples collected in 2002 rather than an averaging of the average values for each of the twelve months. Additionally, the MTBE % by weight reflects the percent by weight in samples with MTBE present. Similarly, the ethanol percent by weight reflects the percent by weight in samples with ethanol present. As an example, the fuel samples for November and December would not effect the MTBE percent by weight because the fuel samples for that month did not include MTBE. The MTBE percent by weight only reflects the averages of the samples that contained MTBE.